Mobile Satellite Services with Complementary Ground Component Authorisation Regime

Introduction

EchoStar Mobile Limited (EML) welcomes the opportunity to respond to this consultation. EML supports the actions of the Commission for Communications Regulation (ComReg) to establish the authorisation regime for Mobile Satellite Services (MSS) with Complementary Ground Component (CGC). However, although we support adoption of the proposed regulatory regime, we have concerns that the approach adopted by ComReg for determining the spectrum fees applicable to CGC will discourage the 2 GHz licensees from rolling out innovative new services to the benefit of Irish consumers and businesses. An inability to roll out CGC on economic grounds has implications for the efficient and effective use of spectrum and would result in a regulatory failure. To this end we encourage ComReg to adopt an administrative-based approach to setting fees. Such an approach will best reflect the costs of licensing and more readily enable the deployment of advanced mobile services throughout Ireland.

Background

As one of the two pan-European licensees for MSS/CGC with plans to begin offering its services in the short-term, EML considers that a clear and certain regulatory environment for its services is critical.

EchoStar XXI, our advanced MSS 2 GHz band satellite completed construction in early 2016 and has been awaiting launch in Kazakhstan since late 2016. Disappointingly the scheduled December launch was postponed due to technical issues with the launch vehicle – beyond EchoStar's control. Nevertheless, we anticipate that the satellite will be launched in Q2 2017. In addition to the activities associated with the satellite launch we have been working in parallel to ensure that the ground based infrastructure and systems are operationally ready. To this end, we have constructed and commissioned our primary gateway earth station and our data centre in Germany. In addition, we have finalised construction and the commissioning of all 16 of our calibration earth stations (CES), including our earth station in Ireland. Further, we have received the first two shipments of our initial MSS device, the portable data terminal, to be utilised with EchoStar XXI. Finally, following a successful launch of EchoStar XXI in Q2 2017 we plan to introduce services to the market in the second half of 2017.

We also continue to make progress on the business side. We have secured our first EU-wide reseller arrangement with Bentley Walker to enable the provision of our S-Band communication services to European customers as soon as the satellite is launched. In addition, EML is also exploring service opportunities in automotive connectivity, Machine-to-Machine (M2M) communications and the Internet of Things (IoT), and public safety. Specifically on public safety, EML is actively working with a potential European partner to develop a mission-critical wide area network for public protection and disaster relief, using satellite services to provide network resilience and coverage in underserved areas.

As we approach commercialisation we are keen to work with regulators to ensure that the ambitions of the European Parliament and Council Decision[1] are realised. In particular, that the regulatory

[1] Decision 626/2008/EC, of 30 June 2008, on the selection and authorisation of systems providing mobile satellite services

framework for the MSS enables the effective introduction of this innovative platform for the achievement of universal service objectives and in so doing enhance competition in the provision of voice and data services on a pan-European basis. To this end, EML is planning to offer as soon as EchoStar XXI is launched and in commercial operation MSS services throughout the EU, even to the most rural and remote areas. In addition, we are continuing with the development of our CGC plans. In order to realise these benefits it is critical that a clear and consistent regulatory regime for CGC be created throughout the EU. Such a regulatory regime should be based on a harmonised pan-European regulatory framework that enables the full use of CGC by both licensees including a cost based approach to spectrum fees that acknowledges the significant financial investment associated with the implementation and operation of such a pan-European service.

EML's detailed responses to the consultation

As requested we provide detailed feedback to the consultation on a chapter by chapter basis.

1. **Chapter 1 Introduction – Legal and policy background, including relevant EU Decisions**

Response

The European Union's regulatory framework for electronic communications is intended to enable European consumers to benefit from increased choice of high-quality and innovative services. As noted by ComReg, section 1.11, the European Commission sought a harmonised approach for the adoption of MSS across the European Union to take account of the high up-front investment required and to take account of the associated high technological and financial risks to make the services economically viable. In addition it should also be acknowledged that the Complementary Ground Component (CGC) is intended to be an integral part of the mobile satellite system[2]. To this end EML is keen to ensure that the licensing approach and fees adopted by ComReg for the authorisation of MSS and CGC take account of the significant upfront investment and ongoing financial risk in light of the requirements under the European framework and Decisions[1,3,] that seek to facilitate the introduction of MSS and CGC on a technology and service neutral basis. Furthermore, we encourage ComReg when determining the appropriate regulatory approach to take account of the need for flexibility to accommodate a range of applications whether aircraft based communications systems or terrestrial based systems such that no service solution is disadvantaged economically.

2. **Chapter 2 – Technical and Operational Conditions**

Response

EML welcomes the acknowledgement that the Aeronautical CGCs, aeronautical terminals and the aircraft terrestrial stations, must operate as specified in the ECC Report 233. However, we note that ***t****he use of CGCs on a service neutral basis to provide hybrid satellite-terrestrial mobile services was not subject to study in ECC Report 233 and accordingly, there is no basis for the imposition of the Report findings to the hybrid satellite-terrestrial mobile service planned by EML. EML therefore urges ComReg to clarify that the interference mitigation measures captured in ECC Report 233 need only be applied when the CGC component is used to provide the aeronautical service****.***

EML also wishes to emphasise that when utilising the CGC as part of a hybrid satellite-terrestrial aeronautical service, if the operating characteristics of the Aeronautical CGC System were to deviate from those specified in ECC Report 233 then additional interference studies would be required to

[2] ComReg Consultation 17/19, March 2017, section 1.18, page 11
[3] Decision 626/2008/EC on the European Parliament and Council on the selection and authorisation of systems providing mobile satellite services.

determine the consequential impact to adjacent systems. As ECC Report 233 determined, aeronautical terminals operating in the aeronautical CGC system may, in some cases[4], result in interference to Direct-air-to-ground (DA2G) ground stations, Electronic Communications Network (ECN) base stations in adjacent bands, or to conventional CGCs of MSS systems in the 2 GHz MSS band. Therefore, if the Aeronautical CGC system characteristics do not adhere to those defined in ECC Report 233, resulting in an effective increase to the EIRP power levels, then additional interference studies would be required.

We therefore request that ComReg require MSS operators operating the hybrid satellite-terrestrial aeronautical services, to implement only the system characteristics and applicable mitigation measures identified in ECC Report 233 to ensure coexistence between electronic communications services.

3. Chapter 3 – Draft RIA on the procedure to determine spectrum fees for CGC

Response

As has been noted in response to Chapter 1 significant upfront investments are necessary in order to establish the innovative new services envisaged by the European Commission when implementing the Decision to deliver MSS & CGC services on a Europe wide basis. Furthermore, regulatory interventions should be such that it encourages the efficient use of spectrum. EML therefore welcomes the observations from DotEcon in section 4.4;

> *'that operators are under no obligation to deploy a CGC, and if the cost of doing so is too high relative to the additional revenue that they would gain, they may instead decide not to roll out a CGC component. As a result, the assigned spectrum might not be used for CGC. Within this context, ComReg is of the view that the pricing structure should have the objective of encouraging the roll out of a CGC where efficient to do so'*

To this end we are surprised that ComReg has sought to adopt the 'Opportunity Cost Based Approach – Option 2' when determining the regulatory approach to setting CGC fees. In particular we note the following against the specific observations made by ComReg to justify Option 2;

- *Takes account of longer-run opportunity cost and avoids creating potential competitive distortions in mobile markets – this presumes that the type of service that will be deployed is comparable to today's mobile services in scale and value. However, ComReg acknowledges that CGC is intended to be integral to the MSS service, existing within the same spectrum with independent operation and not permitted to operate beyond 18 months of any failure of the satellite component;*

- *Would accord with ComReg's statutory objective of encouraging the efficient use and ensuring the effective management of spectrum by taking account of long-run efficiency considerations – implies that the spectrum will only be efficiently and effectively used if it was deployed for the terrestrial mobile service;*

- *Sets the fees conservatively that are reflective of opportunity cost to ensure MSS licensees are not discouraged from rolling out services – the setting of fees towards the lower end of*

[4] For example, when the aeronautical terminal is transmitting with high power at low altitudes

the range determined by other Member States does not as a consequence determine whether MSS licensees will be discouraged from rolling out CGC based services;

- *Provides greater regulatory predictability about the pricing mechanism ComReg will apply to similar bands in the future – whilst the setting of a precedent will inherently create greater certainty it should not be a justification for the approach which is inherently flawed;*

- *Would pre-empt any structural competition concerns before they materialise – as has been noted the spectrum right has been granted on a Pan-European basis with the expectation that the services would be able to benefit from the scale economies that result. If such developments were limited to Ireland then they would not benefit from the pan-European scale economies and as such would be unlikely to lead to structural competition concerns in isolation;*

- *Would better enable ComReg to prevent anticompetitive effects arising in the market and would therefore better protect the interest of consumers and ensure the efficient rollout of services – the CGC element of the service cannot and should not be compared with the terrestrial mobile service and hence be considered a direct competitor. ComReg seems focused on avoiding any risk / argument that might as a result of this new service lead to a case for adjusting the existing regulatory framework and charging principles that apply to the mobile service rather than nurturing the introduction of a new service in the market; and*

- *Is in line with advice provided by DotEcon – whilst the approach is as recommended by DotEcon, they also note that the approach is intended to 'prevent unfair competition with terrestrial mobile services.[5]' This further suggests that the object of the exercise is to discourage any impact to the regulatory regime of the terrestrial mobile service.*

From the above it can be concluded that ComReg has sought to address the issue by seeking to avoid any risk of distortion to the existing regulatory framework as it applies to terrestrial mobile services. However, given the truly innovative infrastructure and services proposed in the context of MSS and CGC we consider that MSS and CGC require a regulatory framework that recognises the benefits of competitive alternative communications platforms to existing services.

Accordingly EML considers that the proposed approach would impose significant regulatory fees on the CGC portion of MSS/CGC and be a disincentive to investment in Ireland which would be to the detriment of Irish consumers and businesses.

EML, therefore, encourages ComReg to reconsider the Option 1 approach for setting fees and in so doing adopt an administrative pricing model (one that is based on the costs of regulation) for radio spectrum used for CGC. This approach has been adopted in several EU member states, and outside the European Union by the administrations of the United States and Canada, where CGC is regulated on a service- and technology-neutral basis. This approach recognizes the significant costs incurred by satellite operators in relation to the construction and launch of their satellite(s), and in developing their mobile satellite service ecosystem.

[5] DotEcon, 'Pricing of Satellite Complementary Ground Component,' March 2017, page 42.

4. Chapter 4 - Fees

Response

As we have noted in response to Chapter 3 the adoption of the 'Opportunity Cost Based Approach - Option 2' will result in a fee burden on the CGC that is disproportionate to the current status of the service and its future potential scale. If ComReg proceed on this basis then EML will be discouraged from CGC service roll-out in Ireland to the detriment of Irish businesses and consumers.

On a separate but related matter we welcome the proposal to establish authorisation arrangements for Calibration Earth Stations (CES) for the term of the MSS authorisation but are concerned that the annual fees that ComReg are seeking to levy would be equivalent to the fees applicable to a CGC site on the basis of Option 2. It is important to note that the CESs are integral to the network control of the MSS service and independent of the CGC service. To this end it would be wholly inappropriate to determine the licence fees for the single CES site in Ireland on the basis of the provision of terrestrial mobile services. Furthermore, no other Member States has implemented such a framework whereby the annual licence fees for CES have been determined on the basis of the 'Opportunity Cost' of the spectrum – rather the fees levied are based on administrative charging principles.

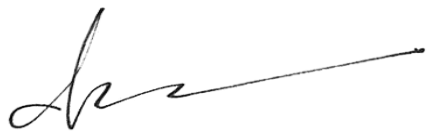
Conclusion

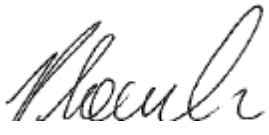
While EML generally supports the actions of ComReg to establish the regulatory framework for the provision of Mobile Satellite Services with Complementary Ground Component. We urge ComReg to ensure that the regulatory framework offers sufficient flexibility to address the breadth of applications possible.

When setting fees for the CGC element of the MSS service we urge the Commission to adopt a service and technology neutral approach and critically and to adopt a fee structure based on administrative cost recovery. As proposed, the Opportunity Cost approach suggested by ComReg will act as a disincentive to investment.

We endorse the application of the findings of Report 233 when the CGC component is used to provide the aeronautical service, but note that there is no basis to apply the findings of this report to the hybrid satellite-terrestrial mobile service envisaged by EchoStar.

Respectfully submitted,





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Response to ComReg Consultation:

Mobile Satellite Services with Complementary Ground Component Authorisation Regime

ComReg Document 17/19

28 April 2017

DOCUMENT CONTROL

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The comments submitted in response to this consultation document are those of Eircom Limited (trading as 'eir' and 'open eir') and Meteor Mobile Communications Limited ('MMC'), collectively referred to as 'eir Group'.

eir welcomes this consultation on the proposed authorisation scheme in Ireland for the complementary ground component ("CGC") elements of a mobile satellite service (MSS). eir's views are presented in respect of the following key points:

1. **Benchmarking values need to be upped in light of recent developments in spectrum assignment and associated valuations.**

eir agrees with ComReg's proposal to follow the dot.econ recommendation to apply an opportunity cost approach to the valuation of the MSS spectrum for the purpose of setting licence fees. In doing so we urge ComReg to ensure that the outcome of the 3.6GHz award duly informs its decision with respect to licence fees for this MSS spectrum.

ComReg should take note of indicators from this award, of significant growth in demand for spectrum across a range of bands in Ireland. This should influence the valuation of the MSS spectrum in its own right to ensure that the opportunity cost is reflective of national circumstances. Furthermore, the position of the MSS spectrum adjacent to the UMTS spectrum band adds further value to the MSS spectrum. The benchmarking exercise undertaken by dot.econ fails to take into account of the latter and makes no provision for the result of the 3.6GHz award outcome, despite its imminence. For instance, dot-econ contrasts that price paid in the 1800 and 1900 MHz auctions at 70%-160% of the reserve price. On completion of the 3.6GHz award, the dot-econ benchmarks will need to be reviewed relative to the ratio of the final price to the reserve price for the 3.6GHz spectrum, the most recent and pertinent comparator.

2. **The approach taken by dot.econ in averaging the value of spectrum nationally by site needs to apply a weighting such that urban sites are priced above the average and rural sights below the average, to reflect their differing economic values.**

eir does not consider it appropriate to set a 'conservative' nationwide price as we consider that this will not operate to prevent unfair competition in urban areas while adequately encouraging rollout in rural areas. It is to be expected that if MSS is to truly deliver societal benefits then its deployment should be focussed on areas not served commercially, i.e. remote and sparsely populated areas.

ComReg should make full use of this opportunity to differentiate between rural and urban prices as higher urban prices will go some way to preventing inappropriate use in urban areas that operates against fair competition, while any lowering of rural prices that this enables will lend to the objective of encouraging rural rollout to ensure coverage in areas where terrestrial mobile is not available or where backhaul opportunities may arise. The population densities of the urban and rural lots defined for the 3.6GHz spectrum award highlight the stark contrast in the potential value of spectrum value, as the average urban lot population density is 30 times that of rural. While eir appreciates that this is not a precise science and that such a dramatic differential might not be appropriate for the ultimate licence fees, the fees must take some account of the clear value differences. This would also send out appropriate pricing signals to MSS providers.

eir does not believe that the rollout of MSS CGC for the purpose of providing additional capacity for a hybrid mobile broadband service to aircraft, would be discouraged by higher urban prices as this would only be the case if a significant number of sites were required for such an application. eir does not consider that this would be the case. We would assume that

these sites would only be needed for flight path lines neighbouring airports. This is on the understanding that once an aircraft is at reasonable altitude, the MSS would switch to the satellite path, therefore there would not be a requirement for a large number of sites in urban areas or Ireland in total for this application.

3. **eir seeks further assurance that the 300MHz guard bands are sufficient to avoid interference to neighbouring spectrum assignments**

ComReg needs to consider the implications not only for 3G in the 2100 MHz band but also the implications for the use of other technologies in this band when the band is ultimately liberalised. In respect of both, eir seeks assurances from ComReg that the responsibility for mitigation of interference arising across neighbouring mobile bands as a result of MSS CGC deployment will rest with the MSS operators.

4. **eir Seeks assurances that MSS operators will be obliged to provide ComReg with details of sites as they are deployed to allow other spectrum holders to monitor for any possible interference.**

eir notes that section 6 (6) of the draft regulations requires licensees to *ensure that in each calendar year in which the licence is in force and in any event before the anniversary of the Licence Commencement Date of each such year, it submits updated information to the Commission in respect of part 1 and part 2 of its Licence.*

eir seeks assurance from ComReg that section 6 (6) empowers ComReg to require that MSS operators provide ComReg with details of sites as they are deployed if a concern is raised by another licence holder in respect of harmful interference. eir considers this an important protection for other spectrum holders, against any risk of harmful interference. We consider this to be justified in this instance, particularly in light of the MSS providers' responsibility to maintain the guard bands. .

ERLEBEN, WAS VERBINDET.

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DATE 27.04.2017
REFERENCE Submissions to Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19)

Dear Madam, Sir,

Deutsche Telekom AG (DT) highly welcomes the possible to answer ComReg's Submissions to Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19).

DT believes the framework provides a sound basis for the terms of use as it refers to all the relevant technical standards and procedures established in ITU, CEPT and ETSI and clearly states that the planned European Aviation Network (EAN) is in line with them. We do also welcome the draft fee regulations what is based on a simple and appropriate benchmark methodology. In our answer, we will outline some of the legal background for EAN, refer to the technical conditions followed by some thoughts about the fees and the competition issues. DT also kindly asks ComReg to conclude this consultation in time to not endanger the launch of the planned EAN service by Inmarsat and DT in Ireland what is foreseen to be part of the first service launch after satellite start in early summer.

All in all, DT sees that the proposal of ComReg is suitable and well balanced to set the regulatory framework for MSS services including Aero CGC in the frequency bands 1980-2010 MHz and 2170-2200 MHz in Ireland.

Best regards

i.A.
Karl-Heinz Laudan

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Deutsche Telekom AG

Answer to Public Consultation on MSS-Aero CGC

Deutsche Telekom AG
28.04.2017

Management Summary

Deutsche Telekom AG (DT) welcomes the efforts of ComReg to draft a framework for a MSS and CGC authorization Regime in Ireland and the possibility to contribute to the process within the framework of this public consultation.

DT believes the framework provides a sound basis for the terms of use as it refers to all the relevant technical standards and procedures established in ITU, CEPT and ETSI and clearly states that the planned European Aviation Network (EAN) is in line with them. We do also welcome the draft fee regulations what is based on a simple and appropriate benchmark methodology. In our answer, we will outline some of the legal background for EAN, refer to the technical conditions followed by some thoughts about the fees and the competition issues. DT also kindly asks ComReg to conclude this consultation in time to not endanger the launch of the planned EAN service by Inmarsat and DT in Ireland what is foreseen to be part of the first service launch after satellite start in early summer.

All in all, DT sees that the proposal of ComReg is suitable and well balanced to set the regulatory framework for MSS services including Aero CGC in the frequency bands 1980-2010 MHz and 2170-2200 MHz in Ireland.

Legal Background of EAN

ComReg has summarized the legal background of the MSS framework. DT agrees with this summary and clearly states that the EAN will fully comply with the terms and conditions contained in the mentioned documents.

The European Aviation Network (EAN) is a joint venture of Inmarsat and DT, where Inmarsat holds the license and operates the satellite part of the integrated system and DT operates the complementary ground component (CGC) with approximately 300 LTE base stations across Europe within the footprint of the satellite.

Background:

- European Commission (EC) decided 14 February 2007 (EC Decision 2007/98/EC) on the harmonized use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing mobile satellite services.
- Decision No 626/2008/EC of the EP and the Council of 30 June 2008 contains the rules on the selection and authorisation of systems providing mobile satellite services (MSS)
- Inmarsat was chosen by the EC as one of two parties within a beauty contest to use the lower 2x15 MHz of the frequencies 1980-2010 MHz and 2170-2200 MHz in all EU member states on an exclusive and primary basis for MSS services (EC Decision 2009/449/EC)

Regulatory evaluation:

The conditions for the usage of a complementary ground-based component (CGC) in addition to the satellite mobile radio service (MSS) have been defined by Commission Decision. The conditions set forth in this document are comprehensively fulfilled by the planned business model of Inmarsat.

- Per Article 2, the CGC of the planned EAN is a radio service between a mobile ground station (in this case the aircraft) and several fixed ground stations (the CGC ground network with its approximately 300 base stations)

- In accordance with Article 3 (2), the ground stations are an integral part of the satellite mobile radio system and are controlled by the satellite-based resource and network management system of Inmarsat. They transmit on the same frequencies and in the same signal direction as the satellite system. The frequency requirement of the integrated satellite mobile radio system is not increased by the ground stations.
- DT explicitly supports ComRegs view, that the CGC "*can provide for increased network capacity with a subsequent decrease in latency in traffic hotspots.*" (p. 14, Chapter 2.4 of the consultation document). In accordance with section (4), the ground stations complement the service of the associated satellite system. They provide for increased network capacity along dense flight routes where communication via the satellite can't be guaranteed with the required quality. In providing extra capacity, the CGC is therefore able to carry extra traffic than the satellite component, whilst not generating any additional frequency requirements and being under the control of the satellite-based resource and network management system.
- In accordance with section (9), the MSS Service enjoys exclusive protection against interference of other services. The ground stations correspond to this specification so that they can be used per the approval procedure even if the satellite segment transmits no signal. The ground stations are still part of the overall network, which is controlled by the resource and network management system of the satellite mobile radio system.

In addition, the Decision 626/2008/EC of the European Parliament and of the Council deals also with the admissibility of a CGC deployment. The EAN also fully complies with the conditions laid down in this decision: The system includes a satellite and the complementary ground component is used to improve the availability of MSS within the satellites footprint. As explained above, the conditions for the national approval of the complementary ground component are fulfilled. The EAN uses the assigned frequencies, CGC is controlled as an integral part of a satellite mobile radio system by the resource and network management systems of Inmarsat and does not increase the spectrum needs.

ComReg have stated already that CGC „can be used to provide for increased network capacity in traffic hotspots, with a subsequent decrease in latency" (see para 2.4 p.14) and also explicitly recognises that "the use of CGC is not limited to overcoming the impact of shadowing of the mobile satellite's signal made by buildings, geographical features and other 'clutter'". DT welcomes and supports this view. This is especially the case, because in the recitals of EC DEC 626/2008, point (18), is also listed that complementary ground components are

> *"... typically, to enhance the services offered via the satellite in areas where it may not be possible to retain a continuous line of sight with the satellite due to obstructions in the skyline caused by buildings and terrain. [...] The authorisation of such complementary ground components will therefore mainly rely on conditions related to local circumstances."*

This clause is clearly to be understood as an example of usage, as the formulations "typically" or the limiting condition "mainly" clearly indicate. It is by no means to be understood that the case quoted in the passage as an example is to be regarded as a necessary condition. It does not mean that a complementary ground component is to be used exclusively for cases where the horizon is interrupted (i.e. in houses). A strict interpretation of this one exemplary situation within the whole of the document 626/2008/EC contradicts the intention of the decision to create the ground for new and innovative services and platforms as expressly stated in paragraph (5). If the intention of the MSS decision had been to make a necessary

condition from the above-mentioned case, the phrase "exclusively" or "in any case" would have been chosen instead of "typically".

The EAN, including its ground component, is a highly innovative, new MSS system that allows customers to access high-speed internet access in aircraft, regardless of where they are in Europe. It is the first pan-European connectivity offer to contribute significantly to the development of a single European market in the telecommunications sector, resulting in a high volume of investment by all the parties involved, all of whom are based in Europe. The contribution to economic welfare and jobs thus benefits the European market. All of this is in line with the considerations in (5) of Decision 626/2008/EC, which states that MSS is to provide an innovative new platform for a wide range of pan-European telecommunications and broadcasting services. The fulfillment of all conditions and intentions of the regulatory framework show that the planned use of the CGC, including an intensive use it, is to be welcomed from a regulatory perspective. The integrated approach leads to innovation, investment and economic growth in Europe, more competition in the aviation communications market and a true benefit for the European customers.

Technical conditions

The EAN will fulfil the technical and operational obligations with respect to the EU regulatory framework as set out in the relevant European Commission Decisions. For operation of the integrated MSS system with a CGC element, measures will be taken to ensure that there is no harmful interference experienced by users of Primary Services in adjacent bands.

The ECC and CEPT compatibility studies referred to will be considered and relevant mitigation techniques used such as those in ECC Reports 197 and 233, the relevant ETSI harmonised standards and the block edge mask from CEPT Report 39. EAN will already be configured in a way that respects the 300 kHz guard band within the 1980 – 2010 MHz band at 1980 MHz. The range 1980-2010 is the transmission range of the on-board equipment. At 15 MHz bandwidth, 13.5 MHz are used (75 resource blocks of 180 kHz each). So, there will be automatically 750 kHz distance to the band end. Nevertheless, ComReg could decide to follow the CEPT harmonised frequency arrangement for terrestrial mobile systems (as contained in Decision ECC/DEC/(06)01) similarly to most other European countries, according to which the 300 kHz guard band has been applied below 1980 MHz.

The network equipment is developed in full conformance with ECC Report 233 and the relevant ETSI standards. The assignment of the 1980-2010 MHz and 2170-2200 MHz frequency bands to the Mobile Satellite Services (MSS) by ECC Decision ECC/DEC (06)09 took place after studies on the compatibility of both the satellite component and the Complementary Ground Component (CGC) have been concluded with existing neighboring radio networks. These studies (CEPT 013 and ECC Report 197) dealt with a scenario in which the MSS system, including CGC, is used similarly to a mobile network. In this case, the terminals are located on the ground and are supplied by base stations of a CGC, the characteristics of which have been assumed to be commonly used in mobile radio networks.

Within the framework of the EAN business model, however, the situation is different in some respects. The goal here is not to serve end devices on the ground but rather "end devices" in the airspace. The airspace here is the vertical space, which is usually flown by commercial aircraft.

This will result in the following major changes for the CGC and the "terminal":

- The base stations on the ground have an antenna characteristic, the vertical profile, which is significantly different from the usual profile of the mobile radio network. Instead of a relatively narrow, downwards oriented vertical profile, a broad, upwards directed profile is used.
- The cell radii and therefore the distances between the individual base stations are comparatively large
- The "terminals" have a defined, downward profile instead of a relatively isotropic antenna profile
- The "terminals" are at a high altitude

Investigations cannot simply be applied to the business model found in the EAN business model. Consequently, it was necessary to re-examine the interference question. The examination result is presented in the form of the ECC report 233. This report deals specifically with the case of an "Aeronautical CGC" and defines the parameters that are relevant in the case of the EAN. As expected, the Aeronautical CGC Base Stations are not expected to interfere. The benefit of this is that the radiation characteristics lead to a lower field strength on the ground than it would be expected with "conventional" mobile radio stations.

The larger height of the terminal, referred to in the ECC report "Aeronautical Terminal", leads in some scenarios to certain "mitigation measures" to ensure non-interference: From the point of view of a mobile radio operator in the frequency band 1920-1980 MHz, the auxiliary transmissions which the Aeronautical Terminal transmits are relevant. The ECC Report 233 proposes a mask for the power flux density, which must be adhered to by the Aeronautical Terminal. This can be achieved either by corresponding filtering of the secondary emitters or by a reduction in the transmission power at low heights. The same considerations are applicable to other radio systems on the ground, in particular to a further MSS system in the adjacent frequency range. Further interference considerations concern "system-internal" interferences, in which the interplay of the satellite component with the CGC is considered. These are scenarios in which the EAN network itself would interfere with the fact that the same spectrum is used for the communication to the satellite (MSS) and the ground (CGC). This dual use of the spectrum is made possible by suitable antenna characteristics as well as by shielding the aircraft fuselage (top towards the bottom).

Overall, the report concludes that interference is not to be feared:

"The results show that the aeronautical CGC ground stations will not create any harmful interference to the Electronic Communication Network (ECN), VLCC and Mobile Communications on Aircraft (MCA) systems."

The measures described in the report for minimizing interference are technically implementable and are fully implemented in the intended EAN network.

Fees and competition issues

DT welcomes ComReg's approach to calculate the fee. With the generally acknowledged principle of a EUR/MHz/Pop Benchmark, the value for a terrestrial service is calculated in an appropriate way. taking then into account, that the EAN will have just a few base stations compared to terrestrial networks, the site based costing is a fair solution that is scale able for any kind of service in respect to its site density.

As we already touched the point of terrestrial networks, DT would like to point out, that EAN will not be competitive for terrestrial mobile networks in Ireland. EAN strengthens competition in the aviation connectivity market. As an innovative service, the EAN is a perfect complement to the current market offer. It does not affect any competition of mobile operators in any country of operation of EAN. The reasons for this fact are as follows:

- The EAN ground component will be operated completely separately from the mobile networks of DT. It will be operated by Towercom on behalf of T-Systems UK (TS UK) as the local network operator for DT. As there is no linkage between terrestrial mobile networks in Ireland and EAN it can't affect the competition in the mobile market on Irish territory.

- The management of the EAN subscriber base will be held strictly separated from the mobile subscriber base of DT. The EAN subscriber base will be managed by the ISP. In cases where T-Mobile Hotspot GmbH (TMHS) will be ISP there will be no connection between TMHS customer data and the mobile operator's ones.

- The EAN is not designed for terrestrial coverage, neither in terms of site locations (rural, hills, airports) and coverage or in terms of the antenna design and therefore does not compete with any Irish terrestrial mobile networks. Furthermore, the system is led by the satellite component and therefore clearly no land mobile system.

- EAN will not offer mobile communication services to end users with the cabin of the aircraft. It is neither capable to deliver M2M services to air cargo as the signal needs to be received by the antennas installed outside the aircraft and the fuselage shields the interior of the aircraft against the signal.

- EAN will connect aircrafts. The aircrafts are equipped with specific designed antennas on the bottom of the aircraft to receive signal. EAN is not designed to serve for terrestrial mobile services nor have the mobile devices of end users the ability to use the S-band.

- Customers in the aircraft will not connect directly to the EAN network. They will connect their devices via a local Wi-Fi network inside the aircrafts cabin. That means, that the EAN is a usual Wi-Fi service for the end users as the EAN only connects the aircraft to the internet. The service on board will be provided by an ISP.

- While the customers in aircraft cabin are connected to an independently operated Wi-Fi-network there is no chance that any of the in EAN involved parties will be favored in a discriminatory matter regarding handover of roaming customers for example.

- Under the terms of the EAN project currently being developed with Inmarsat, it will be Inmarsat alone which contracts with the airlines, by selling them connectivity and add-on services. In contrast, TS UK and DT will not make any commercial offer of EAN services to customers: TS UK would provide DT with connectivity on Irish territory and DT would contract with Inmarsat to provide ground connectivity in Ireland and other countries. Hence the project under development cannot have any impact on competition in terrestrial mobile services.

Concluding all the points mentioned before it is obviously, that EAN is not even able to impact the terrestrial mobile market in Ireland (nor in any other country) and therefore there is no need further follow this point.

Timing of EAN

As already stated in the management summary, there is an urgency for the tower deployment for the CGC of the EAN in Ireland. Ireland is supposed to be part of the first step roll-out and service launch of EAN. With this, Irish customers will be able to benefit from the new system from the beginning. For this, it is necessary that the framework for the Mobile Satellite Services with Complementary Ground Component Authorisation Regime will be in place before summer, to enable the roll-out of the base stations in time. Therefore, DT welcomes very much the draft framework provided with the consultation and waits for the final publications of the framework by ComReg by summer to enable this highly innovative and beneficial new system for aeronautical connectivity in Europe.

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Commission for Communications Regulation
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Email: marketframeworkconsult@comreg.ie

26 April 2017

Dear Sir, Madam,

Re: ComReg Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19)

I am delighted to enclose on behalf of Inmarsat a response to ComReg's Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19, published 20th March 2017).

Inmarsat welcomes ComReg's initiative to open this revised consultation on MSS 2GHz with CGC systems, as it seeks to introduce a regulatory framework that accommodates a range of technologies, including those Inmarsat will use for its planned "European Aviation Network" (EAN) in Ireland. This follows in the footsteps of many other EU Member States that have now authorised Inmarsat's MSS and CGC, and introduced appropriate frameworks to do so.

As ComReg is aware, the development of the integrated hybrid MSS and CGC has been advancing rapidly across Europe in preparation for a commercial launch for the EAN, as the key commercial application. EAN's first major airline customer - the International Airlines Group (IAG) - is prepared for the start of commercial services in the second half of this year, following launch and in-orbit deployment of the S-Band satellite (Europasat).

As announced in December 2016, Inmarsat made a substantial additional investment in the satellite programme by entering into an agreement with a new launch provider (Arianespace). This step was taken in order to mitigate against any risk of further delay to the satellite launch schedule outside of Inmarsat's control, and to ensure that Europasat would be launched as soon

as possible. We are pleased to confirm that since our December 2016 announcement the Europasat launch schedule remains on track for the planned launch in June.

We therefore take this opportunity to urge ComReg to conduct any remaining steps required towards the implementation of a licensing framework.

We shall look forward to engaging further with ComReg in due course and we remain at your full disposal should you require any further information or assistance from Inmarsat at this stage.

Sincerely,

Alison Horrocks
Director
Inmarsat Ventures Limited

inmarsat

Annex:

Submission to Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19)

1) System and Service Possibilities

Inmarsat welcomes ComReg's proposed 'technology neutral' approach to authorising MSS 2GHz with CGC systems, as it seeks to accommodate a range of technologies under one framework, including the highly innovative technologies that underpin the European Aviation Network (EAN). Indeed, the principle of technology neutrality is one deeply engrained in the EU MSS regulatory framework, which aims at encouraging investment, innovation and the provision of pan-European services, irrespective of the specific nature of such services. This is illustrated, for instance, by EC Decision No. 2007/98/EC ("the Harmonisation Decision"), according to which "*...systems capable of providing mobile satellite services (MSS) are seen as an innovative alternative platform able to provide various types of pan-European telecommunications and broadcasting/multicasting services regardless of location of end users, such as high speed internet/intranet access, mobile multimedia...*" (Recital 3). This shows a clear "open mind" approach underpinning the EU MSS regulatory framework as to types of services that can be supported through an integrated MSS with CGC platform, and ComReg indeed recognises under Paragraph 2.2 that such a wide variety of services can well include aeronautical services. In fact, services to aircraft are a long-standing traditional MSS market. The principle of technology neutrality is also embedded in the wider EU regulatory framework on electronic communications; for instance, under Directive 2009/140/EC ("the Framework Directive").

Inmarsat also welcomes and agrees with ComReg's underlying assessment that the EU framework definitions themselves on MSS 2GHz with CGC do not preclude the operation of aeronautical services via such systems, and in particular those such as Inmarsat's EAN where the CGC is "used to provide for increased network capacity with a subsequent decrease in latency in traffic hotspots (i.e. along dense flight routes)". In other words - as ComReg also recognises in the consultation document - "the use of CGC is not limited to overcoming the impact of shadowing of the mobile satellite's signal made by buildings, geographical features and other 'clutter'". Inmarsat considers such interpretations to be fully correct and justified in view of the relevant EU Decisions. For instance, EC Decision No. 626/2008/EC ("the 2GHz Authorisation Decision") simply states (under Recital 18) that CGCs are used "typically" to enhance satellite communications in areas where it may not be possible to retain a continuous line of sight with the satellite. It is clear from the use of the word "typically" that Decision 626 was never intended to *prescriptively limit* CGCs to such a function (otherwise Recital 18 would have, for instance, used the word "exclusively" or "only" instead) and nowhere is this notion expressed within this Decision itself. This would also go against the principle of technology neutrality, as described above. The earlier Harmonisation Decision 2007/98/EC also includes yet further indication that CGCs are not limited to an ancillary role

compared to that of the satellite: "*... subject to an appropriate authorisation regime, CGCs could also be utilised even if signals are not transmitted through the satellite components*" (Recital 9).

As illustrated in Figure 2 ("Aeronautical MSS with CGC System"), the CGCs forming part of Inmarsat's EAN will also operate in full accordance with the essential requirements under Article 8 (3)(b) of EC Decision 626/2008/EC (the "common conditions"), since they will:

i) constitute an integral part of a mobile satellite system and be controlled by the satellite resource and network management mechanism owned and operated by Inmarsat;
ii) use the same portions of frequency bands as the associated satellite component in accordance with the MSS spectrum award; namely, the 1980 - 1995 MHz (earth-to-space) and 2170 - 2185 MHz (space-to-earth) frequencies;
iii) use the same direction of transmission as the associated satellite component;
iv) ensure (through the use of innovative technology with a high re-use factor) that the CGCs will not only not increase the spectrum requirements of the associated MSS system but will actually enhance efficiency of such spectrum use; and,
v) be located at fixed locations on the ground.

Inmarsat therefore accepts and agrees with the proposed conditions concerning use of CGC in the Annex 2 Draft Regulations - the so called "Wireless Telegraphy (Mobile Satellite Service and Complementary Ground Component) Regulations 2017" - which duly incorporate and reflect the wording of the EC common conditions and definitions relating to CGC.

2) Proposed Spectrum Fees and Competition

Inmarsat welcomes ComReg's proposed spectrum usage fee of €2,300 per CGC site, and commends the substantial analysis that ComReg has conducted in arriving at this proposal (as outlined in the RIA under Chapter 3), which carefully considers a variety of options based on key information and third party engagement.

ComReg's proposed 'per site' approach has the particular advantage of being a single, technology neutral means of determining a fee that is proportionate to the networks used by each MSS 2GHz with CGC operator, and their associated opportunity costs, in comparison to those operated by mobile network operators in Ireland. Inmarsat understands the reasons for ComReg's conclusion that this option achieves the correct balance between minimising the likelihood of any distortions to competition (vis-a-vis mobile network operators) whilst at the same time not discouraging the deployment of CGC networks by either MSS 2GHz with CGC operators for their respective services.

Inmarsat also understands the DotEcon benchmarking methodology used, which is based on a simple 'EUR/MHz/Population' calculation. Inmarsat considers the proposed 'per site' fee

amount to be minimally balanced and proportionate when applied to Inmarsat's EAN system, which will include a ground network consisting of just 4 CGC sites in Ireland, and 300 to cover the whole of Europe. As noted by ComReg in the consultation (based on the DotEcon Report), the average mobile terrestrial network in Ireland consists of 2,200 sites. Moreover, the CGC sites in the EAN are optimised for communications with aircraft since they are installed on higher elevations and are pointing upwards. It is therefore clear that Inmarsat's use of terrestrial towers will serve the niche market for aeronautical communications, which is distinct from the mass consumer market served by mobile operators. The fact that the EAN sites would cover much less number of users than a typical MNO site could have also been taken into consideration.

In addition to the comparative size of ground network, we take this opportunity to highlight the other reasons why, from both a network and service perspective, the integrated MSS and CGC EAN is not reaching similar numbers of users to mobile terrestrial (MNO) services in Ireland and therefore should not be subject to a comparable fee level:

Firstly, MSS services of any kind are very distinct from MNO services. For instance, MSS is generally only used by very select customers, as opposed to mass market end-users of mobile network services. This means that, even in the case of terrestrial-based MSS with CGC services, only a very small number of MSS end-users would be using signals from any given tower at any given time compared to MNO service end-users within similar tower coverage. This difference of targeted services and customers between MSS with CGC and MNO is even more acute when specifically comparing Inmarsat's main commercial application of MSS with CGC, the EAN, and the scope of MNO.

Unlike a mobile terrestrial network, the EAN is itself a highly innovative network that combines and integrates the use of a satellite with ground based-stations ("aero CGCs") located at fixed locations on the ground, a satellite Gateway station (in Greece), and aeronautical terminals installed outside aircraft to communicate with both network components of the integrated EAN system.

As mentioned above, the aero CGCs form an integral part of the satellite system and are controlled by the satellite resource and network management system of Inmarsat. As ComReg refers to in the consultation document, the network components constituting EAN will be integrated via both an on-board communications manager (comprising an intelligent router) and a centralised server in the core network, both of which are developed and operated by Inmarsat as the satellite operator.

The network will use the 2GHz MSS frequencies allocated to Inmarsat in EC Decision 2009/449/EC. Aero CGCs will only be deployed within the coverage of the S-Band satellite, and in accordance with the conditions and definitions under EC Decision No. 626/2008/EC. Under Inmarsat's business case, Aero CGCs will therefore not operate independently from the satellite system, nor provide services to consumers, nor to end users of any other Mobile or Fixed ground network service in Ireland but only to passengers of an airline, on board of aircraft that are equipped with S-band antenna.

Unlike terrestrial stations used to provide terrestrial mobile communications services, Aero CGC stations on the ground will also point exclusively upwards towards aircraft flying at altitude and cannot therefore be accessed in any way by end users in the same way as mobile terrestrial communications services on the ground in Ireland (or in any other country for that matter in which the EAN service is being offered). The Aero CGC network on the ground is also entirely separated from the terrestrial mobile networks operated by mobile network operators (e.g. 3G or 4G), including those operated separately by our CGC partners, Deutsche Telekom and their local entities.

MNO services also constitute a completely different and separate market from that of communications services to aircraft. A number of factors show this, for example:

- **Type of service**: As an aero service the EAN is a wholesale backhaul service offered to airlines (who themselves control access to end-users of the communications services offered on-board their aircraft) rather than a retail terrestrial communications service offered directly to end users. Airlines will hold the relationship with the end-user of the communications services and will equip their aircraft with the EAN radio equipment;
- **Type of terminals**: Unlike hand-held user terminals such as those used to access traditional terrestrial mobile communications services, the EAN terminals are antennas mounted outside the aircraft fuselage, which only a few highly specialised suppliers of aeronautical terminal equipment produce. For the EAN, end-user passengers on board the aircraft will access in-cabin broadband connectivity services by connecting their own devices (smartphones, tablets, laptops etc.) to a standard Wi-Fi router connection inside the aircraft cabin, which uses on-board Wi-Fi frequencies not in S-Band. There will therefore be no handheld consumer terminals on the market communicating in S-Band as part of the EAN, either for use by end-users on the ground or inside the aircraft;
- **Number of customers**: As stated above, EAN customers are airlines who purchase and install specialised equipment, as opposed to the millions of end-users served by terrestrial mobile operators through handheld mobile devices.

Finally, Inmarsat's EAN also does not present any competition issues within the aeronautical broadband connectivity services market in which it is placed. Aeronautical broadband connectivity services are already being provided on a global, and sometimes European, basis through a number of competing satellite offerings. The use of satellites for a range of purposes is well established and, whilst authorisations to use spectrum and substantial investments may be required, there are no unusual barriers to entry. The major aeronautical service suppliers have been offering the broadband connectivity services essentially proposed by Inmarsat's EAN to airlines for many years. Inmarsat's EAN merely intends (through the use of a CGC) to increase the capacity of the supply and improve the quality of aeronautical services along dense flights routes in the increasingly congested European airspace.

Inmarsat's EAN offering therefore contributes to the development of the existing market and actually enhances competition by increasing the availability of pan-European aeronautical connectivity services and end-to-end connectivity.

To conclude, MSS with CGC services have a completely different scope (end services, customer base, applications, etc.) than typical MNO services. Moreover, Inmarsat's specific EAN service is addressing a different service and market than MNO, thus not competing in any way with MNO services in Ireland (nor in any other country for that matter where EAN is offered) and this is clear given the fundamental differences in both the markets being served and the unique network configuration of the EAN. Inmarsat's EAN service is placed firmly within the aviation connectivity market and actually strengthens competition in that specific market, as opposed to harming it, and EAN is a perfect complement to the existing market offering.

3) Technical and Operational Conditions

Inmarsat accepts ComReg's proposed Technical Conditions in Part 3 of the draft "Mobile Satellite Service with Complementary Ground Component Licence" in Schedule to the Annex 2 Draft Regulations.

We confirm that Inmarsat's EAN CGC network is configured in a way that respects the out-of-block EIRP power limits, the in-block power limits and the 300 kHz guard band as prescribed under Part 3. Nevertheless, on the latter, Inmarsat considers that ComReg could decide to follow the CEPT harmonised frequency arrangement for terrestrial mobile systems (as contained in Decision ECC/DEC/(06)01) similarly to most other European countries, where they conclude that the 300 kHz guard band be applied below 1980 MHz. Inmarsat would therefore invite ComReg to consider aligning this requirement.

In any case, it is our understanding from ComReg's proposals that the 300Khz guard band requirement only applies to the operation of the CGC element in the case of Inmarsat's aeronautical MSS with CGC system; noting in particular that the EAN MSS terminals (communicating with the satellite) will be automatically disabled below 3000m in order to comply with the spirit of ECC Report 233, thus mitigating against any interference with terrestrial systems on the ground.

Inmarsat confirms that all EAN network equipment is developed in full conformance with ECC Report 233 and the relevant ETSI standards as listed in section 2.4 of the consultation document. Accordingly, all required mitigation measures will be implemented by Inmarsat to ensure that there is no harmful interference caused by EAN to terrestrial users of Primary Services in adjacent bands.

BY EMAIL & POST TO:

Mr Gerry Fahy
Commissioner,
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24 October 2017

Dear Gerry,

Re: 2GHz MSS with CGC licence framework in Ireland

I refer to Comreg's still pending conclusions to the Consultation on Mobile Satelllite Services with Complementary Ground Component Authorisation Regime (Comreg 17/19), which took place almost seven months ago now in April 2017.

In your letter of 10 February, you indicated to Inmarsat that Comreg expected to have in place the new licensing framework "mid-year" 2017. Comreg later published its official Action Plan for 2017-2018 which indicated a later time-line of "Q3 2017" for the publication of its conclusions. It has become apparent that Comreg's time-line has slipped yet further, yet still Inmarsat has not received any clear, or reliable, commitment on when exactly the conclusions will be published, or indeed any legitimate justification for the ongoing delays.

Inmarsat therefore wishes to register with Comreg - once again - its very serious concerns at the continued significant delays to the licensing process, of which Comreg owes an important responsibility to both 2GHz MSS operators (not just Inmarsat) to complete in the most efficient way possible. Comreg also has an obligation under EU Decision No. 626/2008/EC to issue to each 2GHz MSS awardee the necessary CGC authorisations in Ireland.

Inmarsat's S-band satellite ("Inmarsat S EAN") is - since 2 months now - fully tested and ready for commercial operation at its final orbital location. This milestone was formally confirmed to Comreg by our letter dated 1 September.

inmarsat

As Comreg is aware, Inmarsat's 2GHz MSS with CGC project has now entered an extremely critical phase in which our launch customer - the International Airlines Group (IAG) - is preparing to immediately commence commercial service over the innovative network on board its fleet of aircraft. As Comreg is also aware, Ireland's Aer Lingus is a key consituent airline of IAG.

This would have catastrophic consequences for Inmarsat and its many stakeholder partners in the project, not to mention the millions of Irish and European air passenger citizens due to benefit from the innovative service.

In light of the above, we have no other option but to insist that Comreg does not delay any further in its duties to conclude upon the new licensing framework, following the April public consultation process, and to finally provide certainty in respect to our 2GHz MSS with CGC licence in Ireland.

Given the critical situation, Inmarsat would like to take the measure of already submitting to Comreg an application for 2GHz MSS with CGC licence, in order that Comreg can be in a position to issue any remaining authorisations to Inmarsat immediately following the conclusions Decision and Ministerial sign-off. This same process has been followed in the United Kindgom, allowing OFCOM to expedite its Decision to authorise Inmarsat's CGC.

For the purpose of Inmarsat's application, I hereby enclose in Annex to this letter the specific technical and location parameters for Inmarsat's MSS 2GHz CGC stations now deployed and tested in Ireland that will support the EAN service in Ireland. The CGC sites have been tested using the nominal parameters as provided attached with a very successful result, concluding that all in Ireland are effectively ready for service.

As Inmarsat confirmed in its April 26 input to the consultation, the EAN will operate as described under Chapter 2 of the consultation document, and in full accordance with the conditions specified under the new draft Regulations.

We kindly ask that the requested authorisation/s be addressed together with all related correspondence to:

Matt Evans
Inmarsat Ventures Limited
99 City Road
London
EC1Y 1AX

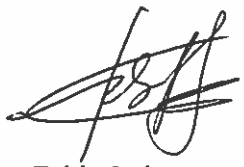
Therefore, the planned aeronautical system is part of the same visionary approach adopted by Inmarsat almost ten years ago, predicting possible market trends in innovative services, with the aeronautical domain as an important future application for the integrated satellite with terrestrial system concept.

Finally, I take this opportunity to request a meeting with you in order to further discuss and clarify the reasons for the ongoing delays, or any specific doubts which you may have with proceeding with the authorisation process. I would be very grateful if you could offer your soonest availability for such a meeting.

In the meantime, I respectfully request from Comreg a speedy conclusion for both the finalisation of the consultation and the issuance of the CGC authorisation.

Thank you in advance for your soonest response.

Yours Sincerely,



Fabio Leite
VP, Regulatory & Market Access
Inmarsat Ventures Limited

cc. Mario Franci, SVP European Sales and Revenue

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24th April 2017

Market Framework Division
Commission for Communications Regulation
Block DEF, Abbey Court
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Dublin 1, D01 W2H4
Ireland

Dear Sir or Madam,

Submissions to Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19)

T-Systems Limited will build and operate the CGC of the European Aviation Network in Ireland (and the United Kingdom) on behalf of its parent company Deutsche Telekom AG (DTAG) and therefore welcomes the opportunity to contribute to the public consultation on Mobile Satellite Services with Complementary Ground Component (CGC) Authorisation Regime (ComReg 17/19).

T-Systems Limited believes that the MSS Framework covers all the relevant technical standards and procedures that are established in ITU, CEPT and ETSI and clearly states that the planned European Aviation Network (EAN) is in accordance with them. Furthermore, T-Systems Limited confirms that the European Aviation Network will fully comply with the required and supports ComReg's view that the CGC "*can provide for increased network capacity with a subsequent decrease in latency in traffic hotspots.*" (see page 14, Chapter 2.4 of the consultation document).

T-Systems also confirm that the European Aviation Network will fulfill the necessary technical and operational obligations with respect to the EU regulatory framework as set out in the relevant European Commission Decisions. For operation of the integrated MSS system with a CGC element, measures will be taken to ensure that there is no harmful interference experienced by users of Primary Services in adjacent bands.

T-Systems Limited as the ground network operator for the European Aviation Network in Ireland wishes to remind ComReg that a solid legal framework is needed very soon so as not to delay the roll-out of the base stations in Ireland. Only by having the necessary regulation in place in a timely manner will Ireland be able to benefit from this highly innovative new system for aerial broadband connectivity.

In summary T-Systems Limited sees the ComReg proposals as being suitable and well balanced, ready to set up the regulatory framework for MSS services including Aero CGC in the frequency bands 1980-2010 MHz and 2170-2200 MHz in Ireland.

We trust that you find this acceptable but if you have any queries or require further information please contact the undersigned.

Yours faithfully,

Garron Clark-Darby
Head of Contract Management, T-Systems Limited

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28 April 2017

Market Framework Division
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Ireland

Email: marketframeworkconsult@comreg.ie

Re: Submissions to Consultation on Mobile Satellite Services with Complementary Ground Component Authorisation Regime (ComReg 17/19)

Dear Sirs,

We write on behalf of our client, ViaSat Inc. ("**ViaSat**"), to provide comments in response to the Consultation Document "Mobile Satellite Services with Complementary Ground Component Authorisation Regime" (ComReg 17/19) (the "**Consultation**"). We have also submitted comparable comments to the European Commission and other Member States. Please note that this letter and attachments contain confidential information.

ViaSat is a provider of broadband telecommunications services to the in-flight connectivity market. ViaSat is planning to provide this service to airlines throughout Europe in conjunction with Eutelsat using Eutelsat's Ka-Sat satellite, and also a new ViaSat satellite to be launched in 2020. ViaSat is therefore directly impacted by the authorisation ComReg is proposing to grant to Inmarsat Plc or any affiliate ("**Inmarsat**") in its Consultation because of, *inter alia*, the anti-competitive impact such authorisation would have on the in-flight connectivity market in Europe.

Below we provide a summary of the main reasons why (i) Inmarsat should not be authorised to use the frequencies from 1980 to 1995 MHz and from 2170 to 2185 MHz (the "**S-Band**") for its proposed Air-To-Ground ("**ATG**") system, and (ii) if ComReg nevertheless decides to grant Inmarsat a complementary ground component ("**CGC**") authorisation, ComReg should not do so unless and until, among other things, Inmarsat has proven that it has satisfied all milestones and conditions imposed by the European Commission's Decision 626/2008/EC on the selection of operators of pan-European systems providing mobile satellite services ("**MSS Decision**").[1] To provide a better understanding of the impact of this matter on competition in

[1] Decision 626/2008/EC of the European Parliament and of the Council on the selection of operators of pan-European systems providing mobile satellite services (OJ 2008, L 172, p. 15).

the in-flight connectivity market, we also briefly set out why granting such a licence to Inmarsat threatens to foreclose competition in that market, to the detriment of consumers, innovation and investment in the European industry and undermining the legitimate expectation of other competitors of Inmarsat. We note that there is no evidence of an appropriate consideration of the impact on competition in the Consultation.

We remain at your disposal to provide any additional information or clarification that would assist you in assessing this important issue.

Yours faithfully,

Latham & Watkins,

LATHAM & WATKINS

I. INMARSAT SHOULD NOT BE AUTHORISED TO USE S-BAND SPECTRUM FOR AIR-TO-GROUND PURPOSES

Inmarsat was originally authorised to use the S-Band for certain purposes after its selection in 2009, after an EU-wide tender process. The conditions of that selection required Inmarsat to provide pan-European mobile satellite services, and also allowed it to operate "complementary ground components" under certain circumstances – in particular as "*an integral part of a mobile satellite system and* [that] *are used, typically, if needed to enhance the services offered via the satellite in areas where it may not be possible to retain a continuous line of sight with the satellite due to obstructions in the skyline caused by buildings and terrain*".[2] Notably, the Parliament and the Council defined "mobile satellite system" for this purpose as requiring the use of "mobile earth stations," which, as the name suggests, employ antennas that (i) can operate while moving, (ii) are capable of communicating with the core satellite element of the system, and (iii) when appropriate, can also communicate with any complementary ground components.[3]

In this case, after missing for mere commercial reasons the milestones and conditions on which the exclusive right to use the S-Band was granted (as discussed further below), Inmarsat has been trying to obtain permission to use that spectrum for an entirely different business – the provision of service primarily over a ground-based system of cellular towers that communicate with airplanes when they are flying across Europe (this use is referred to below as an air-to-ground, or "ATG" network).

The towers in Inmarsat's ATG system are designed to communicate with an antenna located *under* the airplane's fuselage, and directed towards the ground. Notably, the antenna under an airplane's fuselage would not communicate with the MSS satellite and therefore is not a "mobile earth station."[4] A separate antenna *on the top* of the airplane's fuselage, operating on a separate communications path, possibly would serve that function.[5] Thus, the operation of the ATG towers is not within the express purpose for which the EU harmonised the B-band – "mobile satellite systems" providing "mobile satellite service."

Aware of that change of purpose, Inmarsat has asked several national regulatory authorities, or other qualified national authorities (altogether, "**NRAs**"), to enlarge the scope

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2 E.g. MSS Decision, recital 18.

3 MSS Decision, Article 2(2). The International Telecommunication Union's Radio Regulations define a "mobile earth station" as being "*intended to be used while in motion or during halts at unspecified points*", "*located on the Earth's surface or within the major portion of the Earth's atmosphere,*" *and* "*intended for communication*" with one or more space stations (*i.e.*, satellites). *See* ITU Radio Regulations, Articles 1.63 and 1.68, available at http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/1.43.48.en.101.pdf

4 *See* Inmarsat, "*Connected aviation: making it possible today*", 21 April 2016, at 10-11, available at http://www.ae-expo.eu/wp-content/uploads/2016/04/Inmarsat-Deutsche-Telekom.pdf

5 As discussed below, those mobile-earth-station-to-satellite communications capabilities would comprise less than about 0.1% of the spectral capacity of this proposed new business.

of the original EU-wide spectrum award to allow this fundamentally different spectrum use that clearly departs from the notion of a "complementary ground component" portion of an authorised S-Band "mobile satellite system," which, as defined in the MSS Decision,[6] requires communications paths to or from a "mobile earth station." Some of the NRAs rightly consider such a request beyond their legal authority and have asked the Commission to decide that legal question and thus address the permissibility of Inmarsat's request.

A. *Granting a licence to Inmarsat would be inconsistent with ComReg's functions and objectives*

Before deciding whether to exercise its discretion to authorise Inmarsat to use the S-Band for its proposed ATG system, ComReg, as Ireland's national regulatory authority with statutory responsibility for the licensing and regulation of the electronic communications sector, must have full and proper regard to its statutory functions and objectives.

ViaSat believes that any decision by ComReg to grant the contemplated authorisations to Inmarsat would be inconsistent with ComReg's functions and objectives and could do lasting and irreparable damage to competition in the EU in-flight connectivity market, to the detriment of consumers.

There are a number of ComReg's statutory functions and objectives that are of particular relevance in the current situation. First, it is important to note that ComReg has, as one of its functions under section 10(1)(b) of the Communications Act 2002 (as amended) (the "**Act**"), *"to manage the radio frequency spectrum... in accordance with a direction under section 13"* and that Section 12(1)(b) of the Act also includes in the objectives of ComReg *"to ensure the efficient management and use of the radio frequency spectrum ... in accordance with a direction under section 13"*.

The Minister for Communications has issued a number of policy directions to ComReg pursuant to section 13 of the Act. We note the directions issued on 21 February 2003, namely *"(a) The Commission shall ensure that in making regulatory decisions in relation to the electronic communications market, it takes account of the state of the industry and in particular the industry's position in the business cycle and the impact of such decisions on the sustainability of the business of undertakings affected; (b) The Commission shall ensure that, in its management of the radio frequency spectrum, it takes account of the interests of all users of the radio frequency spectrum."*

Furthermore, Section 12(1)(a) of the Act requires ComReg to pursue the following objectives in the exercise of its functions *"(i) to promote competition; (ii) to contribute to the development of the internal market, and (iii) to promote the interests of users within the Community"*.

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[6] MSS Decision, recital 18 and Article 2(2) ("'*mobile satellite systems' shall mean electronic communications networks and associated facilities capable of providing radio-communications services* ***between a mobile earth station and one or more space stations****, or* ***between mobile earth stations*** *by means of one or more space stations, or* ***between a mobile earth station and one or more complementary ground components*** *used at fixed locations. Such a system shall include at least one space station*") (emphasis added).

In relation to the objective to promote competition, Section 12(2) (a)(ii) and (iii) of the Act requires ComReg to take all reasonable measures including *"ensuring that there is no distortion or restriction of competition in the electronic communications sector"* and *"encouraging efficient use and ensuring the effective management of radio frequencies"*.

Also relevant are various aspects of the electronic communications regulatory framework (referred to as the "regulatory framework"). We note that Regulation 9 of the European Communities (Electronic Communications Networks and Services) (Authorisation) Regulations 2011 (SI No. 335 of 2011) (the "**Authorisation Regulations**") sets out, *inter alia*, how rights of use for radio frequencies for the provision of electronic communications networks or services shall be facilitated and the circumstances in which ComReg may grant individual rights of use for radio frequencies. Regulation 9(11) of the Authorisation Regulations provides as follows: *"The Regulator shall ensure that radio frequencies are efficiently and effectively used having regard to section 12(2)(a) of the Act of 2002 and Regulations 16(1) and 17(1) of the Framework Regulations"*.

Section 17(1)(b) of European Communities (Electronic Communications Networks and Services) (Framework) Regulations 2011 (SI No. 333 of 2011) (the "**Framework Regulations**") requires ComReg to ensure that its spectrum allocations are based on *"objective, transparent, non-discriminatory and proportionate criteria"*. Regulation 17(10) of the Framework Regulations provides that ComReg may *"having regard to its objectives under section 12 of the Act of 2002 and Regulation 16 and its functions under the specific regulations lay down rules in order to prevent spectrum hoarding..."*

As ComReg acknowledged in section 1.5 of the Consultation, *"Radio spectrum is a valuable national resource underpinning important economic, social and communications activities"*. In light of the finite nature of spectrum and its many potential applications, it is important for the State in maximising its spectrum to ensure that spectrum allocation allows the provision of necessary services and, to the greatest extent possible, encourages the development and use of spectrum efficient technologies.

A key risk identified in the regulatory framework is spectrum hoarding, *i.e.* a situation where an undertaking holds spectrum rights which are not being used. The award of spectrum to an undertaking in circumstances where there is no clarity at all that it is to be used would be very damaging to the public good.

In the present case, there has been a consistent failure by Inmarsat to meet the MSS Decision's milestones and other conditions ever since it was selected in 2009. It is incumbent on ComReg to address Inmarsat's failure to comply with all the milestones and other conditions in the MSS Decision. As discussed below, Inmarsat missed its 2011 deadline for launching the required MSS satellite and providing continuous commercial MSS over the requisite geographical area for purely business reasons. Moreover, Inmarsat still has not complied with that requirement, and its new ATG-based spectrum proposal raises serious issues under EU law, as well as serious competition concerns.

Even if ComReg took a different view on those issues, no facilitation of Inmarsat's intended use of the S-Band should take place unless and until Inmarsat provides sufficient evidence that it has met all applicable milestones and conditions. At a bare minimum, ComReg should obtain a report from an independent third party concluding that Inmarsat has launched the required satellite and is providing continuous commercial MMS over the requisite geographical area **before** it makes any decision to award the spectrum in question to Inmarsat.

Absent third-party verified evidence of compliance with all the milestones and other conditions in the MSS Decision, there is a real risk that the spectrum in question may not be used efficiently, or perhaps at all, for the express purpose for which Inmarsat originally was authorised to use the S-Band – "mobile satellite systems" providing "mobile satellite service" on a pan-European basis and providing universal connectivity.[7]

By virtue of this submission at the latest, ComReg is now on notice of the non-fulfilment by Inmarsat of the MSS Decision's milestones and other conditions. In these circumstances, ComReg would be acting in breach of (i) its own statutory powers and objectives to manage spectrum and ensure efficient management and use, and (ii) EU law, as further explained in the remainder of this section I and in section II below, were it to authorise Inmarsat to use the S-Band spectrum for ATG purposes. Consistent with the need to safeguard the use of valuable spectrum and the Ministerial direction to ComReg, it is critical that ComReg takes action to safeguard spectrum, recognising the current state of the in-flight connectivity market in Europe and the likely impact of the requested spectrum award on all current market participants.

Any issue of rights to use the spectrum for Inmarsat's proposed ATG system by ComReg would also raise serious competition concerns, explained in section III below, and would be entirely at odds with ComReg's statutory requirement under Section 12(1)(a) of the Act *"(i) to promote competition; (ii) to contribute to the development of the internal market, and to (iii) to promote the interests of users within the Community"*.

Inmarsat's use of the S-Band spectrum for its proposed ATG system, if authorised, would grant Inmarsat a significant pricing advantage in comparison to its competitors (such as ViaSat and Eutelsat), which would, in turn, create a significant risk that these competitors would be foreclosed. Such foreclosure of competition in the in-flight connectivity services market in Europe would be to the detriment of (i) users and (ii) competition more broadly, including technological developments in that market and, as such, would be wholly inconsistent with ComReg's functions and objectives. Accordingly, it seems impossible for ComReg to grant the right of use requested by Inmarsat without breaching its obligations to promote competition and ensure that there is no restriction or distortion of competition.

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7 MSS Decision, recital 2.

ViaSat calls on ComReg to investigate fully the information provided by Inmarsat in support of its application and ensure that it is third-party verified so that ComReg can establish whether any spectrum to be assigned will be fully utilised and not give rise to hoarding concerns or act so as to foreclose competition in the in-flight connectivity services market before deciding whether to grant any authorisation to Inmarsat. ViaSat also urges ComReg to investigate fully the violations of EU law that would be occasioned by granting Inmarsat's request, as discussed in the next section.

B. *Granting a licence to Inmarsat would breach EU conditions on the award of S-Band spectrum and would reward Inmarsat for its lack of compliance*

S-Band spectrum was assigned to Inmarsat after a competitive tender for the provision of mobile satellite services ("**MSS**"). The EU set up a dedicated legislative framework to define the scope and conditions of this spectrum use, and those conditions were never respected by Inmarsat. Inmarsat cannot now be rewarded for its failure to respect the conditions of utilisation by granting it an authorisation for a fundamentally different use of the S-Band, as discussed in section C below.

As identified at paragraph 1.13 of the Consultation, the Common Conditions of the MSS Decision oblige Inmarsat, as a "selected operator", to meet nine specifically defined progress milestones. While the first five milestones had to be met as a condition to be admitted to the tender, the last four (milestones 6 to 9) should have been met by 13 May 2011, culminating in a launch of the promised MSS satellite, and the actual and continuous provision of commercial MSS to Member States over a fully functional MSS system.[8] Inmarsat did not meet this deadline. Certain Member States, coordinated through the Communications Committee ("**COCOM**"), apparently allowed Inmarsat until 1 December 2016 to satisfy the outstanding milestones, *i.e.*, the successful launch of its proposed MSS satellite network and the actual provision of "continuous commercial MSS" within the territories of the Member States.

This is the latest of a number of deadlines regarding the implementation of its S-Band authorisations that Inmarsat has missed. Inmarsat still has not launched its satellite, and it now claims that its MSS satellite will be launched, and that service will be available by the end of 2017, which remains to be seen. In any event, it is unquestionable that, as a result of the repeated failures, Inmarsat has not used its S-Band spectrum award for the actual and continuous provision of MSS, to the Member States, as required by the MSS Decision. As ComReg observed at paragraph 3.45 of the Consultation, "no services have as of yet launched in the 7 years since the licences were awarded".

In addition, Article 7(2)(c) of the MSS Decision and its Annex list the following among the Common Conditions applicable to Inmarsat:

- the obligation to "honour any commitments" given in "their applications or during the comparative selection procedure, irrespective of whether the combined demand for radio spectrum exceeds the amount available"; and

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8 *See* MSS Decision, Article 7(2).

- the requirement to "provide clear evidence that it is effectively providing the *continuous commercial MSS within the territories of the Member States* using the number of satellites it has previously identified under milestone three to cover the geographical area the applicant has committed to in its application by the date of the commencement of the provision of MSS obligation."[9]

These provisions were included in the MSS Decision in order to give meaning to the selection criteria provided under its Articles 4 and 6, under which the applicants were judged and a final selection was made (*e.g.*, actual MSS coverage of 60% of the land area of the Member States, MSS service actually and continuously available on a commercial basis to at least 50% of the population, the actual provision of MSS service to rural and remote areas, and all other commitments given by the selected applicants).

Allowing a major deviation from the system that an applicant described in its application would render the selection criteria meaningless. It would be fundamentally unfair and against the clear language of the MSS Decision to allow *ex-post* an applicant not to honour the criteria on which it was selected and to implement something else, at a date much delayed and entirely different from its original commitment.

In this context, the ATG system which Inmarsat is currently seeking to implement could not have been selected under the complementary ground component-related MSS selection criteria, for the reasons detailed below. Inmarsat should not now be allowed to make such a drastic modification of the system for which it applied and the terms on which it and the other potential participants in the tender process made decisions about whether to participate. The EU is not contemplating a modification of the law that would allow such a change, as stated by the Director General of the Directorate General for Communications Networks, Content & Technology ("**DG CONNECT**"), Roberto Viola, in a letter of 14 February 2017: "*no re-definition of the purpose of using the 2 GHz band as foreseen in the MSS Decision 626/2008/EC is currently planned*". A copy of this letter is enclosed.

Inmarsat is therefore in clear breach of its obligations as confirmed by the fact that several national regulatory authorities, including the UK, Germany, Finland, Spain and Sweden, are reported to have started enforcement procedures for lack of compliance.[10] In this respect, we call to your attention the following public information.

During consultations with COCOM in January 2016, Inmarsat reportedly attributed to one of its launch providers (SpaceX) Inmarsat's expected failure to meet its 1

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9 *Id.*, Article 7(2) and Annex at paras. 7 and 9 (emphasis added).

10 *See* Ofcom, "Notice to Inmarsat Ventures Limited and Solaris Mobile Limited", 18 March 2015, available at https://www.ofcom.org.uk/spectrum/interference-enforcement/compliance-notices; *see also* Ofcom, "Authorisation of terrestrial mobile networks complementary to 2 GHz Mobile Satellite Service (MSS) A consultation on the licensing of 2 GHz MSS Complementary Ground Component (CGC) for aeronautical use", 22 February 2016, paragraphs 3.9, 1.9 and 7.6, available at http://stakeholders.ofcom.org.uk/binaries/consultations/2GHz-mobile-satellite-systems/summary/2GHz_consultation.pdf; Olswang, "MSS authorisation regimes, authorisations and enforcement in the EU Member States", Final Report for the Commission DG Communications Networks, Content & Technology (2014), p. 39-40, available at https://ec.europa.eu/digital-single-market/en/news/study-mobile-satelllite-services-mss-authorisation-regimes-authorisations-and-enforcement-eu.

December 2016 deadline to launch an MSS satellite and commence continuous commercial mobile satellite service to the Member States.[11]

A more credible reason for Inmarsat's latest missed deadline, however, appears to be quite different. Inmarsat missed the original 14 May 2011 deadline entirely for voluntary business reasons: because "*it was unable to put the necessary technology in place profitably, a company spokesman said,*"[12] and Inmarsat "*ha[d] been looking for the right business opportunity*"[13] *ever since it was awarded the S-Band in 2009.* Inmarsat "*got around that problem with a cost-sharing agreement under which it will operate the new satellite, Europasat, on a shared basis [...].*"[14] Inmarsat's S-Band MSS capability is now designed as part of a satellite jointly owned with HellasSat, called "Europasat/HellasSat-3."[15]

Since HellasSat-3 was still "*in the final stages of production*" in late February 2017,[16] it is apparent that Inmarsat's requisite S-Band MSS satellite capability could not have been launched and brought into service by 1 December 2016 – even if Inmarsat had arranged suitable launch services by that date.

That Inmarsat's shared spacecraft was not finished by the 1 December 2016 deadline also may explain why:

- Inmarsat did not try to overcome launch delays it expected in January 2016 by using the "*options* [it holds] *with other companies to cover such an eventuality*";[17]
- Inmarsat prioritised the launch of another of its spacecraft with SpaceX (once SpaceX returned to flight) over the launch of its S-Band MSS capability;[18] and

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11 https://www.anacom.pt/render.jsp?contentId=1379951 ("*Inmarsat reported that SpaceX will not be able to launch the satellite before 1 December 2016* (last roadmap milestone); *the launch has been pushed back to the period from April to June 2017.*").

12 https://www.wsj.com/articles/inmarsat-to-provide-in-flight-broadband-in-europe-1401952023.

13 http://www.bbc.com/news/science-environment-27709104.

14 https://www.wsj.com/articles/inmarsat-to-provide-in-flight-broadband-in-europe-1401952023; *see also* http://www.inmarsat.com/press-release/inmarsat-lead-eu-wide-roll-flight-passenger-broadband-services/.

15 http://www.satellitetoday.com/publications/st/2016/07/21/thales-alenia-space-finishes-europasat-construction-inmarsat-ifc-network/; http://space.skyrocket.de/doc_sdat/europasat-hellassat-3.htm.

16 https://www.thenationalherald.com/151869/hs3-will-mark-new-era-use-space-technology-greece-minister-says/; http://www.amna.gr/english/article/17394/Hellas-Sat-3-will-mark-new-era-for-space-technology-use-in-Greece--minister-says.

17 https://www.wsj.com/articles/elon-musks-spacex-may-lose-inmarsat-launch-order-1478165008?emailToken=JRr8f/ByYXWeh9IzbMwx0FouK6wVEOySA0jPJXvHKg3JvW2QpeW6yuA0gd6+u3imWQN+7s0C5G56QifdjXAvBZPOy+chzA/8Kw==.

- Inmarsat increased the risk of further delay in meeting its S-Band MSS service requirement by agreeing to launch Europasat/HellasSat-3 along with a co-passenger spacecraft (GSAT-17) whose timely launch-readiness Inmarsat does not control.[19]

This publicly available information raises important questions (i) that go to the heart of what consequences should flow from Inmarsat's failure to meet the 1 December 2016 deadline (and prior deadlines), and (ii) that ComReg should investigate before it proceeds further with Inmarsat's request for authorisation.

Indeed, Inmarsat itself has acknowledged that its failure to satisfy the Common Conditions may result in legal consequences.[20] In this respect, it bears emphasis that EU law obliges Member States to conduct an investigation that carefully and completely examines the circumstances underlying breaches of Common Conditions. Therefore, ComReg should first investigate Inmarsat's failure to meet milestones and the other conditions of its S-Band authorisation before considering whether to grant any licence to Inmarsat.[21]

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[18] http://fortune.com/2016/12/08/spacex-just-lost-a-major-order-because-of-its-launch-problems/; *see also* https://spaceflightnow.com/launch-schedule (reporting a 15 May 2017 planned launch of Inmarsat-5F4 on SpaceX and a 28 June 2017 planned launch of Europasat/HellasSat-3 on Arianespace with co-passenger GSAT-17).

[19] This is not a theoretical risk. The launch of another GSAT spacecraft was delayed last year because problems were discovered with its co-passenger just days ahead of the scheduled launch. http://www.thehindu.com/todays-paper/tp-national/Deferred-GSAT-18-awaits-October-launch-at-Kourou/article14481388.ece.

[20] http://www.inmarsat.com/wp-content/uploads/2016/09/Supplemental-disclosure-document-14-September-2016.pdf, pp. 10-11 ("*[U]nder a roadmap towards the launch of the EAN agreed with the European Commission in 2013* (the "Roadmap"), *we are required to achieve certain milestones. While we have achieved all relevant milestones so far, we expect to miss a 1 December 2016 deadline set for the launch of the S-band satellite delivering the EAN and commercial launch of the EAN. Although the Roadmap is not a binding EU document, as a result of such delay we may still face the risk of fines or other sanctions.*").

[21] Commission Decision 2011/667/EU, of 10 October 2011, on modalities for coordinated application of the rules on enforcement with regard to mobile satellite services (MSS) pursuant to Article 9(3) of Decision No 626/2008/EC of the European Parliament and of the Council; see Article (3)(2) (*"Member States shall investigate whether there is a breach of the relevant common conditions within their jurisdiction.*").

See id., recital 15 ("*In accordance with Article 10(5) of Directive 2002/20/EC a prohibition to provide the services and the suspension or withdrawal of the right to use the specific radio frequency may be decided in cases of serious or repeated breaches where measures aimed at ensuring compliance within a reasonable period of time have failed.*").

C. *Granting Inmarsat's request would breach EU MSS decisions defining the permitted use of S-Band spectrum*

Notably, the Common Conditions also impose the obligation to "*use the assigned radio spectrum for the provision of MSS*" (emphasis added), *not* for the provision of in-flight connectivity through an ATG system. The acquiescence in Inmarsat's intention to use S-Band spectrum for in-flight connectivity using an ATG system (possibly supported by satellite), rather than primarily for MSS supported by CGC, would be equivalent to an unjustified release from the obligation to respect the Common Conditions. It would also be equivalent to an *ex post* rewriting of the conditions on the basis of which S-Band spectrum was awarded, a proposition that the Director General of DG CONNECT has discarded in the enclosed letter of 14 February 2017. Whilst it may well be the case that "[i]n 2009, there were no concrete plans for the type of service that CGC might support", as noted in paragraph 1.25 of the Consultation, the EU MSS framework sets very clear parameters for how CGCs may operate, and requires that CGCs communicate with a mobile earth station. Inmarsat's proposed ATG system does not fall within these parameters, as explained below.

In this respect, it bears emphasis that as noted above, Inmarsat plans a fundamentally different use of the S-Band. The 2008 rules established by the Parliament and the Council under which S-Band spectrum was awarded required that each applicant propose a "mobile satellite system," which was defined as requiring that "mobile earth stations" be used in each communications path.[22] Those "mobile earth stations" would employ antennas that (i) can operate while moving, (ii) are capable of communicating with the core satellite element of the system, and (iii) when appropriate, could also communicate with any complementary ground components.[23] The rules did not allow for Inmarsat's ATG system, which would use ground-based towers at fixed locations to communicate with antennas that would be located *under* airplane fuselages, directed towards the ground, and that would not be able to communicate with its S-Band MSS satellite.

More specifically, Inmarsat proposes an approach under which:

- an antenna located under an airplane's fuselage, directed towards the Earth, would communicate with towers on the ground that communicate with airplanes, as depicted in pink shading in Figure 1 below; and

- a separate satellite antenna located on top of an airplane's fuselage, pointed towards the sky, would communicate with the MSS satellite, as depicted in blue shading in Figure 1 below.[24]

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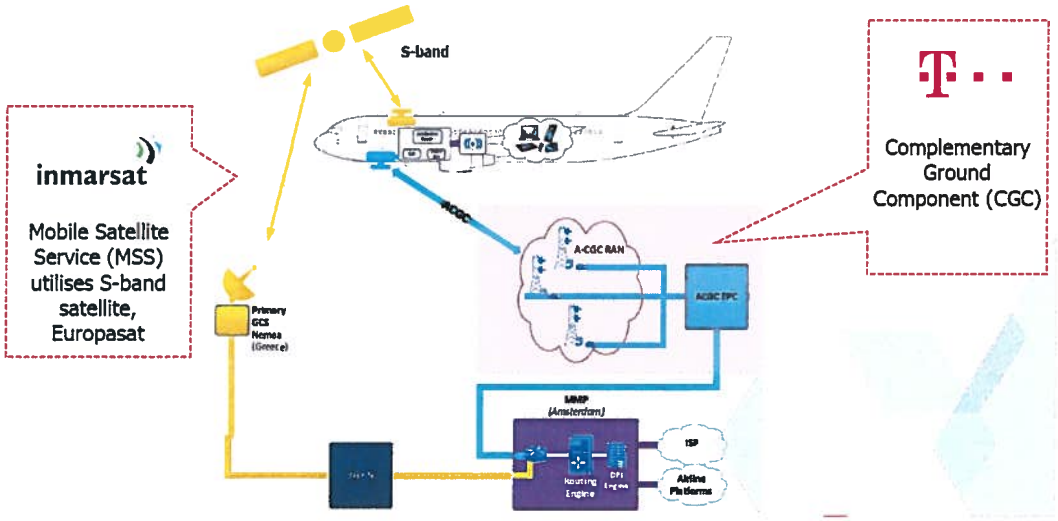
22 MSS Decision, Article 2(2).

23 *Id.;* Call for applications for pan-European systems providing mobile satellite services, OJ 2008, C 201.

24 *See* Inmarsat, Connected aviation: making it possible today (21 April 2016) at 10-11, available at http://www.ae-expo.eu/wp-content/uploads/2016/04/Inmarsat-Deutsche-Telekom.pdf.

Figure 1



Contrary to Inmarsat's claims, in-flight connectivity based on an ATG network is entirely different from MSS provided with the support of CGCs.

Moreover, the definitions of "mobile satellite systems" and CGCs in recital 18 and Article 2(2) of the MSS Decision and the relevant Call for Applications,[25] make it clear that the CGC of any licensed MSS/CGC system must in fact be "complementary" to, and not the core of, a proposed MSS system.

- The MSS Decision defines "complementary ground components of mobile satellite systems" and as "ground-based stations used at fixed locations, *in order to improve the availability of MSS in geographical areas within the footprint of the system's satellite(s), where communications with one or more space stations cannot be ensured with the required quality.*"[26]

- The Call for Applications uses the same definition of "complementary ground components" as the MSS Decision.[27]

Contrary to the description in paragraph 2.11 of the Consultation, the Inmarsat system would not use "hybrid terminals": rather, distinct radiofrequency devices on an aircraft would communicate separately with (i) the satellite and (ii) the ground-based ATG

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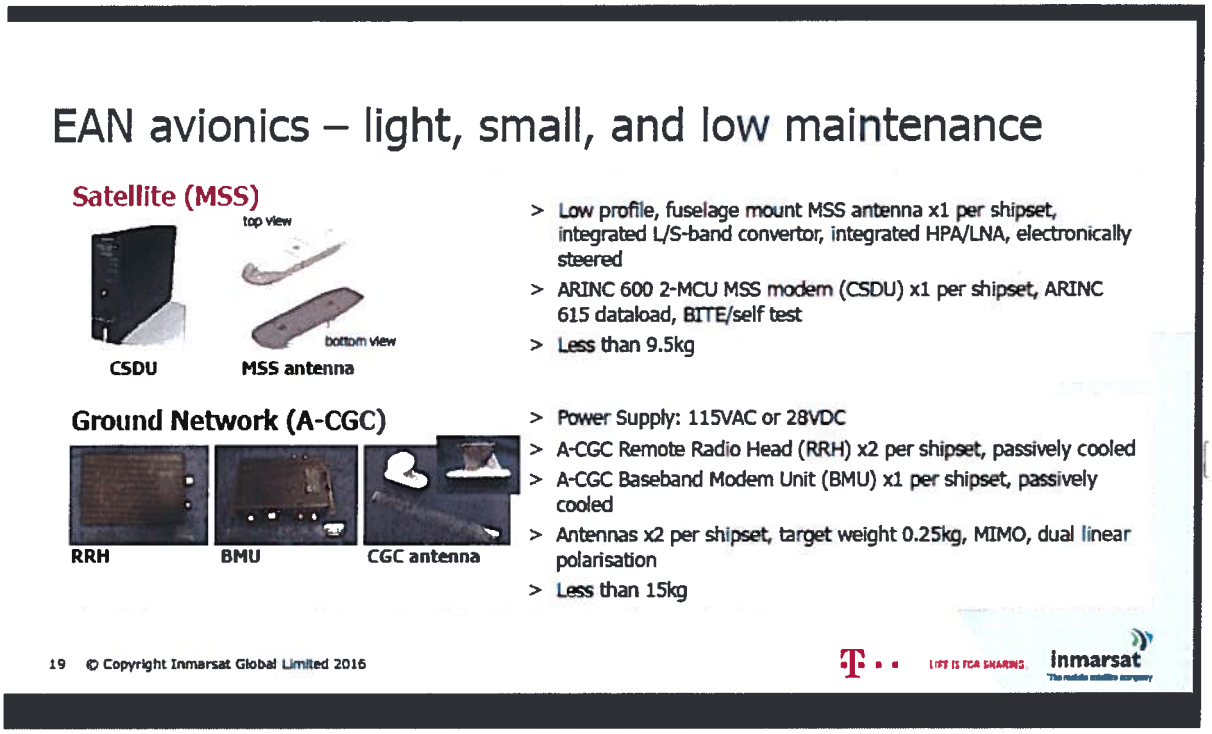
25 MSS Decision; Commission Decision 2007/98/EC, of 14 February 2007, on the harmonised use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing mobile satellite services (OJ 2007, L 34, p. 32); and Commission, Call for applications for pan-European systems providing mobile satellite services (OJ 2008, C 201, p. 3), cited in Selection Decision, recital 2 ("**Call for Applications**"). We collectively refer to these three decisions as "**the EU's MSS decisions**".

26 MSS Decision, Article 2(2)(b) (emphasis added).

27 Call for Applications, paragraph 2(b) (emphasis added).

components (see Figure 1 above and Figure 2[28] below). That is, the top of the aircraft would have an MSS mobile earth station with its own antenna, radiofrequency transmitter/receiver and modem, and the bottom of the aircraft would have an ATG station with its own antenna, radiofrequency transmitter/receiver and modem. Inmarsat's own marketing materials describe the separate and distinct nature of these two different radiofrequency communications paths.

Figure 2



In contrast to the requirements of the clear framework for the MSS tender and authorisation process in the EU, it is apparent that the ground component that Inmarsat envisages for ATG is not complementary to, but instead is the *core* of, the proposed system (if not its *only* component, if satellite antennas are not actually installed in any given case). In reality, this is an ATG system supported by a *complementary satellite component.*

Under the EU's legal definitions, and as identified by ComReg in paragraphs 1.18 and 2.4 of the Consultation, CGC is intended to be used primarily to overcome line-of-sight blockages from natural and man-made obstacles, and is intended to be authorised based "*mainly [...] on conditions related to local circumstances*".[29] Inmarsat's ATG proposal,

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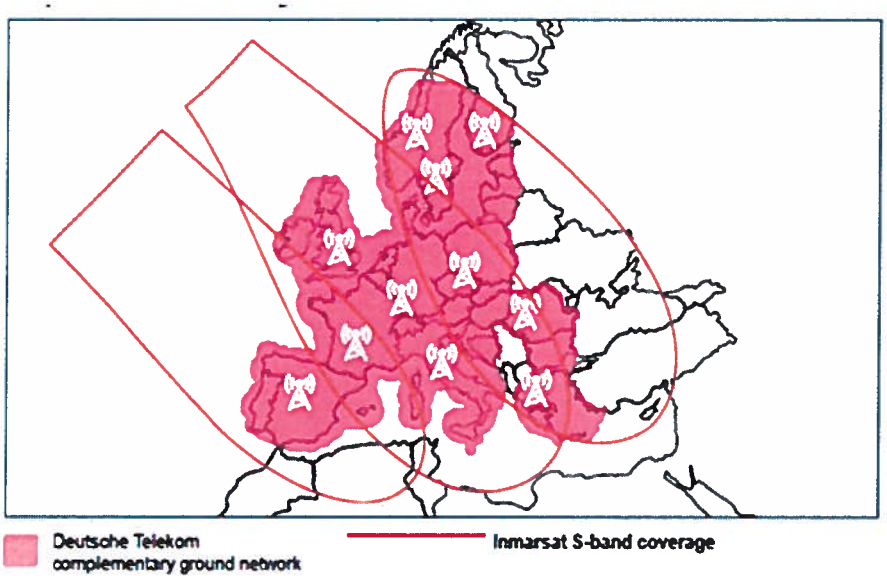
28 Inmarsat, Connected aviation: making it possible today (21 April 2016), p. 19.

29 MSS Decision at recital 18 ("*Complementary ground components are an integral part of a mobile satellite system and are used, typically, to enhance the services offered via the satellite in areas where it may not be possible to retain a continuous line of sight with the satellite due to obstructions in the skyline caused by buildings and terrain [...]. The authorisation of such complementary ground components will therefore mainly rely on conditions related to local circumstances.*"). The use of the terms "typically" and "mainly"

however, is not designed to overcome line-of-sight obstacles and would instead be used in open areas along flight paths where satellite coverage of aircraft almost certainly would be more than adequate.[30] Indeed, it is hard to conceive of *any* situations where aircraft in flight "*may not be* [able] *to retain a continuous line of sight with the satellite due to obstructions in the skyline caused by buildings or terrain,*" such that it necessary to employ a CGC to "*enhance the services offered via the satellite*," as contemplated in the recitals of the MSS Decision. In such circumstances, there simply is no requirement to access a terrestrial system because of a line-of-sight issue with the sky.

In contrast, Inmarsat's terrestrial S-Band network would obviate the need to rely on satellite-based coverage over almost all of the European land mass and associated intercoastal waterways. This is shown in the coverage map below from Deutsche Telekom and Inmarsat (Figure 3).[31] It should thus be apparent that Inmarsat's ATG proposal is far more than a technical capability intended to supplement its satellite service, as contemplated by the MSS Decision and the Call for Applications.

Figure 3



In this respect, we call to your attention that the MSS Decision specifically contemplates, in a circumstance like this, a Member State requesting "*technical information indicating how particular complementary ground components would improve the availability*

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in this context suggests a use principally to enhance service where, based on local conditions, a clear line-of-sight to the satellite does not exist – as detailed below, this is not what Inmarsat has proposed.

30 ViaSat Response to Ofcom Consultation: Authorisation of terrestrial mobile networks complementary to 2 GHz Mobile Satellite Systems (MSS), available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/74409/viasat_uk_ltd.pdf. Ofcom Consultation page available at: https://www.ofcom.org.uk/consultations-and-statements/category-2/2ghz-mobile-satellite-systems.

31 Deutsche Telekom & Inmarsat, The European Aviation Network," available at https://www.telekom.com/resource/blob/390304/.../dl-150929-datenblatt-data.pdf

of the proposed MSS in geographical areas where communications with one or more space stations cannot be ensured with the required quality."[32]

Moreover, we call to your attention that Article 8(3)(c) of the MSS Decision *prohibits the independent operation of CGC* except in limited circumstances caused by "*the failure of the satellite component of the associated mobile satellite system,*" and even in such a *force majeure* circumstance, the decision limits such independent operation to a period of no more than eighteen months.

The fact that the ground component of Inmarsat's ATG system would not be "complementary" becomes even clearer if one considers that only about 0.0018 (or less) of the S-band spectral capacity of the Inmarsat system would be used to provide satellite service. Virtually all of the spectral capacity instead would be employed by the hundreds of ATG towers communicating with aircraft.[33] This confirms that the *satellite component* would be complementary, not the ATG component.

The ATG-primary nature of Inmarsat's proposal is further confirmed by Inmarsat's admission that its ATG network is actually about "densification" of terrestrial spectrum use – using S-Band spectrum far more intensively for ATG than Inmarsat otherwise could use the spectrum on its satellite.[34] This is clear from Inmarsat's depiction of the architecture of its ATG network in Figure 4 below and its explanation that increasing the number and nature of

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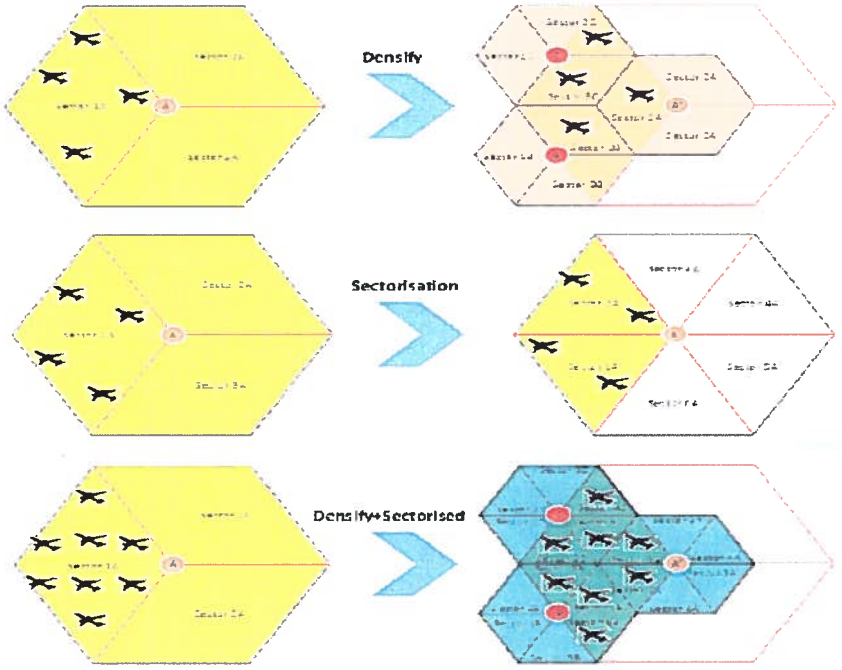
32 MSS Decision, recital 18.

33 Inmarsat's own ATG capacity claims range from about 50 Gigabits/second to 150 Gigabits/second of capacity. Inmarsat Group Limited, "GX Aviation vs other providers," p. 11, available at http://www.inmarsat.com/wp-content/uploads/2014/06/12-GX-Aviation-Vs-other-providers-George-Nicola.pdf (ATG system capacity can be double the "preliminary design" of 25.3 Gigabits/second by doubling the number of antenna sectors per cell site); BBC, "Inmarsat plans EU-wide 'hybrid' network for plane wi-fi", 5 June 2014, available at http://www.bbc.com/news/science-environment-27709104 ("We can deliver over 40 gigabits per second across an air-to-ground network in Europe."); Inmarsat Group Limited, "S-band and ACGC: Powering Aviation Connectivity", pp. 58 and 59, available at http://www.inmarsat.com/wp-content/uploads/2014/09/Inmarsat_Investor_Day_S-band_And_ACGC_September_2014_EN.pdf (depicting capacity of the terrestrial ATG network (referred to in that presentation as ACGC, or "Aero CGC") as ~150 Gigabits/second). *See also* Inmarsat Group Limited, "European Aviation Network", available at http://www.inmarsat.com/european-aviation-network/. ViaSat has calculated Inmarsat's MSS satellite capacity at ~ 90 Megabits/second, based on a 2 bit/Hz efficiency, and 15 MHz re-used over 3 beams, over the 2 x 15 MHz of the 2 GHz Band authorised to Inmarsat. The three beams on the planned satellite, which extend well beyond Europe, are shown above.

34 Inmarsat, Capital Markets Day 2016 (7 October 2016), p. 27, available at http://www.inmarsat.com/wp-content/uploads/2016/10/Capital-Markets-Day-2016.pdf.

the ATG cell sites is the key to increasing its S-Band network capacity "*quickly and cost effectively.*"[35]

Figure 4



In this respect, we call to your attention Inmarsat's stated plans for "*[r]apid and cost-effective scalability*" of this terrestrial network "*by adding ground towers as demand evolves over time,*"[36] and the following claim: "*Bandwidth multiplies rapidly by increasing the number and density of towers.*"[37]

This planned use of the S-Band not only is outside the terms of the EU's 2008 tender, but also appears to be a violation of Article 8(3)(b) of the MSS Decision, which expressly provides that CGC "*shall not increase the spectrum requirement of the associated mobile satellite system.*" Based on information ViaSat has seen, it is highly questionable whether Inmarsat is using the same spectrum for both ATG and satellite purposes in the same area at the same time, because, as described above, the desire to use spectrum for the ATG component would far outstrip the need for spectrum for the MSS component. In other words, it is unclear whether the same frequencies would actually be used in the same place and at the same time for both (i) communications from an ATG antenna under an airplane's fuselage with an ATG ground station, and (ii) communications from the separate satellite antenna on top of an airplane's fuselage with the MSS satellite.

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35 Inmarsat, Connected aviation: making it possible today (21 April 2016), p. 18 (see *supra* footnote 4).

36 *Id.*

37 http://www.inmarsat.com/aviation/aviation-connectivity-services/european-aviation-network/.

We also call to your attention reports that Inmarsat has expressly proposed at COCOM meetings to be authorised to provide ATG services without the need to install a terminal on each aircraft that communicates with its S-Band MSS satellite.[38]

Finally, as further confirmation that Inmarsat's proposed use is not included within the scope of use contemplated for S-Band spectrum, we call to your attention that the CGC concept in the MSS Decision, and the ATG system proposed by Inmarsat, have very different origins. They are two very different matters, as confirmed by other European spectrum initiatives.

As ComReg will be aware, in addition to their efforts to harmonise S-Band spectrum for the purposes of MSS, the CEPT's technical body,[39] the Electronics Communications Committee ("**ECC**"), through Project Team FM48, carried out technical and regulatory sharing studies from 2011 to 2015 to identify appropriate spectrum that could potentially be used to provide connectivity between a network of ground stations and appropriately equipped aircraft in order to provide in-flight connectivity on continental flights on a Europe-wide basis, which is called "Broadband Direct Air to Ground Communication"[40], and is equivalent to ATG. When this group was considering a proposal to make the S-Band available for ATG purposes in 2011, Inmarsat objected, explaining that allowing ATG use would present "acute legal, regulatory and technical obstacles" and would require statutory changes.[41] ViaSat agrees that the same types of impediments exist to Inmarsat's proposal to now use the S-Band itself for ATG purposes.

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38 *See* Anacom summary of COCOM meeting of 22 January 2016 ("*During the second part of the meeting, in which only the member state representatives participated, the discussion focused on [...] whether the member states accept that Inmarsat installs on aircraft only terminals that communicate with AeroCGC (i.e. no terminal that can communicate with the satellite*)," available at https://www.anacom.pt/render.jsp?contentId=1379951.

39 The European Conference of European of Postal and Telecommunications Administrations ("**CEPT**").

40 In particular, the ECC undertook four different technical studies and identified two candidate frequency bands for this purpose (5855-5875 MHz, also referred to as the 5.8 GHz band, and 1900-1920 MHz, referred to as unpaired 2 GHz band). For an overview of the ECC-led harmonisation initiative, *see* T. Weber, "Activities in the CEPT on Broadband Direct-Air-To-Ground Communication Systems Towards a Frequency Regulatory Approach", European Communications Office (ECO), Copenhagen, status as of 4 March 2015, referencing the following ECC or CEPT-led reports/studies: ECC Report 209 [3]: "Studies related to BDA2GC in the bands 1900-1920 MHz / 2010-2025 MHz and in the adjacent bands"; ECC Report 210 [4]: "Studies related to BDA2GC in the bands 5855-5875 MHz, 2400-2483.5 MHz and 3400-3600 MHz"; ECC Report 214 [5]: Broadband Direct-Air-to-Ground Communications (DA2GC) – Regulatory concept; and CEPT Report 52: "Studies on the harmonised technical conditions for the 1900-1920 MHz and 2010-2025 MHz frequency bands ("Unpaired terrestrial 2 GHz bands") in the European Union (EU) [19]".

41 Inmarsat, Unsuitability Of The Bands 1980-2010 / 2170-2200 MHz As Potential Candidate Bands For Broadband Direct Air-to-Ground Communications (DA2GC),

The ECC then adopted two decisions,[42] one for each of the candidate bands, in order to propose their harmonisation in all 48 CEPT members for this ATG use.[43] This harmonization effort has not been successful. Over a dozen nations so far have declined to implement those bands for ATG purposes, apparently because the spectrum already has been licensed or is being used for other purposes.[44] The two identified frequency bands are currently dedicated to Wi-Fi applications (5.8 GHz), or are already allocated to other uses for a long time (1.9 GHz).[45]

These decisions confirm the existence of a dedicated harmonisation process for the frequency bands to be used for ATG services, led by the ECC, which is entirely different to, and independent from, the EU-led, MSS-dedicated, S-Band frequency harmonisation.[46]

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12 September 2011, Doc. FM48 (11)041, available at http://www.cept.org/ecc/groups/ecc/closed-groups/fm-48/client/meeting-documents/

[42] The spectrum identified consists of a 20 MHz channel in the 5.8 GHz band, and a 20 MHz channel in the 1900-1920 MHz band. *See* ECC Decision (15)03, "The harmonised use of broadband Direct Air-to-Ground Communications (DA2GC) systems in the frequency band 5855-5875 MHz", available at http://www.erodocdb.dk/doks/filedownload.aspx?fileid=4193&fileurl=http://www.erodocdb.dk/Docs/doc98/official/Word/ECCDEC1503.DOCX, and ECC Decision (15)02, "The harmonised use of broadband Direct Air-to-Ground Communications (DA2GC) systems in the frequency band 1900-1920 MHz", adopted on 3 July 2015, available at http://www.erodocdb.dk/doks/filedownload.aspx?fileid=4191&fileurl=http://www.erodocdb.dk/Docs/doc98/official/Word/ECCDEC1502.DOCX.

[43] In these decisions, ATG services are defined as "*intended to provide connectivity between a network of ground stations and appropriately equipped aircraft*" aiming to "*provide access to broadband communication services during continental flights on a Europe-wide basis. […] The aircraft stations will only transmit during certain phases of the flight and will not be operated while the aircraft is on the ground or during take-off and landing.*"

[44] European Communications Office, Implementation Status of "ECC Decision of 3 July 2015 on the harmonised use of broadband Direct Air-to-Ground Communications (DA2GC) systems in the frequency band 5855-5875 MHz", ECC/DEC/(15)03, available at http://www.ecodocdb.dk/doks/implement_doc_adm.aspx?docid=2567 and Implementation Status of "ECC Decision of 3 July 2015 on the harmonised use of broadband Direct Air-to-Ground Communications (DA2GC) systems in the frequency band 1900-1920 MHz", ECC/DEC/(15)02, available at http://www.ecodocdb.dk/doks/implement_doc_adm.aspx?docid=2566

[45] For instance, in many, if not most CEPT countries, the unpaired 1920 MHz frequency has been assigned, following competitive procedures, to terrestrial telecommunications network operators for the provision of cellular mobile networks, for long durations, *e.g.*: in Austria until 2020, in Belgium until 2021, and in Bulgaria until 2025. *See* European Communications Office, ECO REPORT 03, The Licensing of "Mobile Bands" in CEPT, 30 May 2016 available at http://www.efis.dk/views2/report03.jsp.

[46] This is confirmed by a paper prepared by an official of the European Communications Office ("**ECO**") close to the EU MSS project, which explicitly states that the ECC studies conducted in preparation of the allocation of the 2 GHz Spectrum to MSS "*did not consider*

The S-Band was not harmonised by the EU for ATG systems, and certainly was not harmonised for spectrum uses that are not merely complementary to a primary satellite spectrum use.[47] In fact, it is impossible to distinguish Inmarsat's planned ATG uses of the S-Band from the terrestrial spectrum uses considered in the subsequent ECC initiative regarding ATG described above.[48] Moreover, Inmarsat's requested new ATG use for the spectrum that was awarded in 2009 is plainly outside the scope of the original EU tender. Any serious technical assessment of the matter would conclude that the terrestrial component of Inmarsat's proposed system would be the main, and not a "complementary", element of the system, and therefore does not fall under the definition of CGC provided in the MSS Decision and the Call for Applications.

In conclusion, the ATG use contemplated by Inmarsat for the S-Band constitutes a fundamental change of the use originally envisaged by the EU. Since the envisaged use for ATG is clearly out of the scope of the decision of the Parliament and the Council, and Inmarsat has repeatedly missed its milestones and has not fulfilled its conditions, ComReg should not authorise Inmarsat's use of the S-Band spectrum for ATG purposes. This would be the most reasonable course to pursue, given that Inmarsat's proposed ATG network does not fall within the definitions of mobile satellite systems and CGCs as currently laid out in the MSS Decision and since the Director General emphasised in his letter that "*no re-definition of the purpose of using the 2 GHz band as foreseen in the MSS Decision 626/2008/EC" is currently planned by the Commission.*"[49]

D. *Inmarsat will not be the entity controlling the ATG system*

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potential use of aeronautical CGC systems, which introduce new interference scenarios"; *see* T. Weber, *supra* footnote 40.

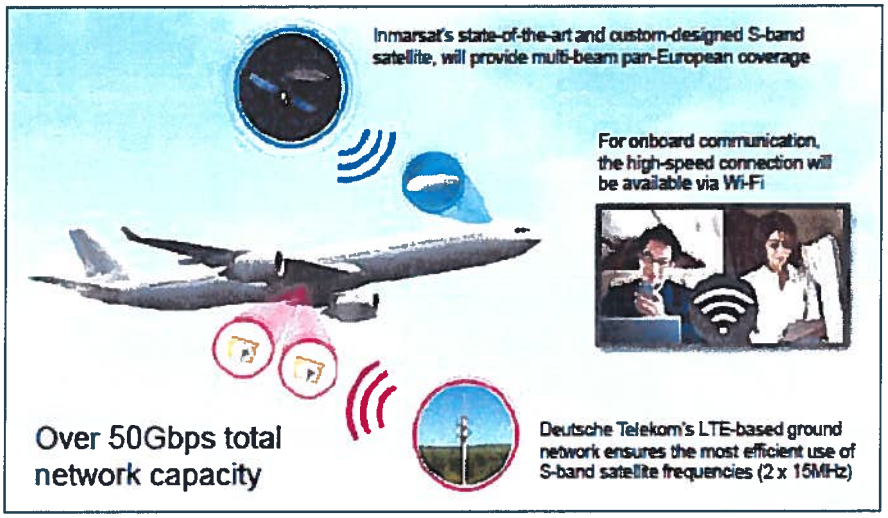
47 A more recent ECC Report, approved in May 2015, explicitly addressed the possible interferences of aeronautical CGC applications implemented in the S-Band with applications implemented in adjacent frequencies. In the description of its purpose, the report states that it "*identifies certain technical and operational requirements for an aeronautical CGC system within the 2 GHz MSS band. Such technical requirements are necessary to ensure protection of the services operating in the adjacent bands* [...] *and of the conventional CGCs of MSS systems in the 2 GHz MSS band*" (emphasis supplied). *See* ECC Report 233, "Adjacent band compatibility studies for aeronautical CGC systems operating in the bands 1980-2010 MHz and 2170-2200 MHz", p. 2, available at http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP233.PDF.

48 See *supra* footnote 40.

49 The logical reading of this sentence is that the Commission is of the view that the ATG network does not fit within the definitions of MSS and CGC as currently laid out in the Parliament's and the Council's MSS Decision and that any modified definition would require a legislative process that the Commission cannot entail.

As identified by ComReg at paragraph 2.7 of the Consultation, "*all of the elements of the hybrid satellite/ground network* [...] *must be under the direct control of the MSS network operator via the space segment, comprising the earth station and the MSS satellite*". This is clearly not the case in relation to Inmarsat's proposed ATG system. First, as explained above, the ATG towers that will communicate with airplanes simply are not "earth stations". Second, as evident from Figures 1 and 3 above, the ground component stations will be operated by Deutsche Telekom and not Inmarsat. Deutsche Telekom's control of the ATG network is apparent from other marketing materials, describing the "LTE-based ground network" that "Deutsche Telekom will build and manage" (see e.g. Figure 5 below):[50]

Figure 5



This arrangement appears contrary to the requirement set out in paragraph 2.13 of the Consultation that the CGC frequencies use be "under the control of the MSS network operator". In Inmarsat's proposed ATG system, the CGC frequencies would be under the control of a third party, Deutsche Telekom.

II. UNDER ANY SET OF CIRCUMSTANCES, INMARSAT CANNOT BE AUTHORISED AT THIS TIME

Even if ComReg took a different view about whether Inmarsat's proposed ATG network is consistent with EU law, no facilitation of Inmarsat's intended use of the S-Band should take place because of Inmarsat's continued failure to meet the MSS Decision's milestones and other conditions. Thus, no such facilitation should take place unless and until (i) Inmarsat provides sufficient evidence that it has met all applicable milestones and conditions (*e.g.*, requiring that Inmarsat has actually launched the required satellite and is providing continuous commercial MSS over the requisite geographic area), and (ii) the competition-related issues discussed in section III below are resolved.

As explained in section I.A above, ComReg would be acting in breach of its statutory powers and objectives to manage spectrum and ensure efficient management and use, were it

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50 Deutsche Telekom & Inmarsat, "The European Aviation Network," *supra* n. 31.

to authorise Inmarsat to use the S-band spectrum for its proposed ATG system without the necessary evidence. In addition, ComReg has a duty under EU law to ensure that authorisation conditions are complied with. As set out in the Director General's letter, the Member States, through their competent regulatory authorities, are obliged to ensure that all appropriate authorisation conditions are complied with. In this context, the Commission emphasised the importance of meeting the milestones stating that "*should such new milestones not be respected, those national authorities have to consider taking further enforcement action, in line with national and EU law.*" The use of the words "have to" strongly implies that, from the Commission's point of view, enforcement actions against Inmarsat in such circumstances would not be at a national regulatory authority's discretion, but rather are required under EU law.

Inmarsat should not be rewarded for its failure to respect the conditions of utilisation, by grant of an authorisation to re-define the purpose and the conditions of the EU's MSS decisions. Rather, Inmarsat's repeated failures to meet the relevant milestones and conditions should lead to Inmarsat not being granted the new ATG authorisation it seeks more than 7 years after it was selected to provide pan-European mobile satellite service. As ComReg notes at paragraph 3.45 of the Consultation, "*no services have as of yet launched in the 7 years since the licences were awarded*". As the DotEcon report commissioned for the purposes of the Consultation confirms, "*delays to the roll-out of services* means [sic] that no CGC authorisations have yet been granted in Ireland".[51]

III. INMARSAT'S ATG SYSTEM RISKS FORECLOSING COMPETITION

The Treaty on the Functioning of the European Union ("**TFEU**") has created a system that aims to ensure that competition in the Internal Market is not distorted. Article 106(1) TFEU in combination with Article 102 TFEU prohibit Member States from adopting measures granting special or exclusive rights that enable dominant firms to achieve outcomes that they could not achieve themselves without committing an abuse.[52] For instance, Articles 106 and 102 TFEU prohibit Member State measures that enable a dominant undertaking to extend its dominance to a neighbouring market.[53] Authorising Inmarsat to use the S-Band spectrum for ATG purposes would do exactly that due to the high risk that such authorisation would create a durable monopoly in the market for in-flight connectivity services. In-flight connectivity competitors in Europe do not and cannot have access to S-Band spectrum. If Inmarsat's ATG spectrum use is authorised, Inmarsat's control of this spectrum will enable it to foreclose competition in the in-flight connectivity services market in Europe.

Eutelsat and ViaSat offer airlines satellite-based in-flight connectivity services in Europe using Eutelsat's KA-band satellite. While the service offering will be further improved when the ViaSat 3 satellite is launched (planned for 2020), the current offering is

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51 DotEcon report "Pricing of Satellite Complementary Ground Component", page 1 (emphasis added). Accessed at https://www.comreg.ie/?dlm_download=dotecon-report-pricing-satellite-complementary-ground-component.

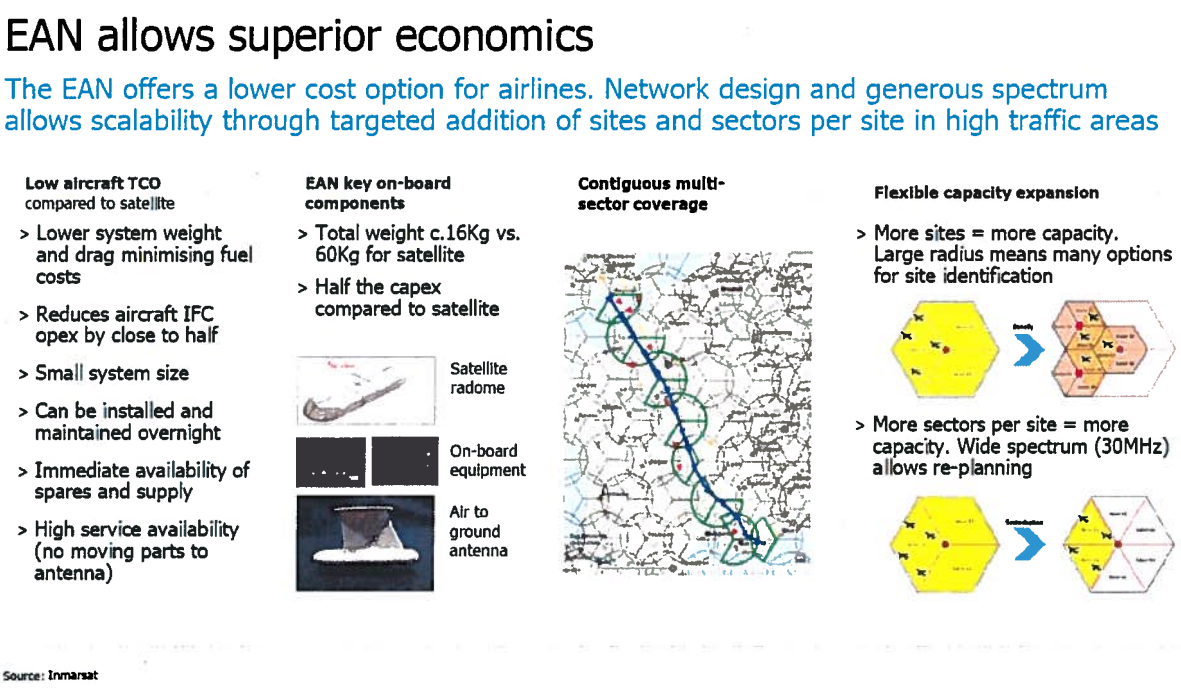
52 *See e.g.* Case C-553/12 P, *DEI,* EU:C:2014:2083, paras. 41 to 46.

53 *See e.g. id.* at ¶ 66, and Case C-462/99, *Connect Austria*, EU:C:2003:297, paras. 81-82.

competitive in terms of passenger experience and cost. Peak speeds are comparable to Inmarsat's proposed ATG system (70-100 Mbit/s vs 75Mbit/s) and so is network capacity (90 Mbit/s vs 36-150 Mbit/s).

Despite Eutelsat's and ViaSat's ability to provide quality service and competitively priced connectivity, there is a significant risk that this service and other satellite-based services will be foreclosed. In fact this is already happening, since Inmarsat has pre-empted authorisation by national regulatory authorities and/or the European Commission by actively marketing EAN (European Aviation Network) to airlines (among others, it has done so with Lufthansa and IAG). Inmarsat's commercial success is not driven by better quality, but because its proposed ATG system affords significantly lower upfront capex costs per plane to the airline. ViaSat estimates that the initial capex for the ATG terminals under Inmarsat's ATG system is approx. €75,000 per plane, compared to approx. €230,000 per plane for a satellite-based system, such as that provided by Eutelsat and ViaSat. Inmarsat highlights this difference in capex as a main selling point for its proposed ATG system (see Figure 6 below):[54]

Figure 6



Inmarsat's pricing advantage stems from the fact that its proposed ATG-based service is delivered primarily on the back of a terrestrial network. The satellite portion is ancillary, which allows Inmarsat to deploy cheaper on-board equipment, which its competitors are unable to use because they provide a satellite-based service and cannot use the S-Band. As a result, Inmarsat's capex advantage is durable.

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54 Inmarsat, Capital Markets Day 2016 (7 October 2016), p. 57, available at http://www.inmarsat.com/wp-content/uploads/2016/10/Capital-Markets-Day-2016.pdf.

The narrow-body planes on which the in-flight connectivity service will be provided are used mainly for short-haul flights in Europe. This is a very competitive business with low margins. As a result, most airlines focus on installation costs per plane rather than the total cost of service including the connectivity cost. Consumers that have to pay the connectivity costs will be harmed by higher prices and poorer quality of service (*e.g.*, true satellite broadband service can work when aircraft are on the ground at an airport, while ATG does not work there). Once the airline is locked in, consumers have no choice of service provider. They have to use the service chosen by the airline even if lower cost or higher quality alternatives are available.

Airlines cannot be expected to look beyond their own interests. Given low margins in the European short-haul sector, it is understandable that they focus on the upfront capital expenditure rather than total cost, and choose Inmarsat's ATG system over the satellite-based systems provided by Eutelsat and ViaSat and others. However, Member State regulators must take into account the consumer interest in undistorted competition. As the European Commission re-iterated in its recent communication on "Connectivity for a Competitive Digital Single Market", infrastructure-based competition is among the most effective ways of delivering new or upgraded Internet connectivity.[55] Authorising Inmarsat to use the S-Band spectrum for its proposed ATG-based system would foreclose network-to-network competition to the detriment of consumers of in-flight connectivity services. Once Inmarsat secures most of the contracts, it will have locked out competition for at least 10 years, which is the typical duration of aircraft contracts and maintenance cycles for major end-item equipment upgrades and retrofits.

The experience of the United States in this regard is instructive. After winning its ATG licence at auction in the US in 2007, Gogo, the only ATG provider in the US, quickly used its market power to lock up nine North American airlines in a manner that enabled Gogo to increase the price it charges the airline passenger.[56] This occurred in an era where telecommunications providers otherwise generally are providing more service capabilities for the same or lower prices. The Gogo service became more expensive over time. As one news story reported: "They've got a monopoly and they just don't care," and "If you've flown for work on a major U.S. airline over the past five years, you've probably used Gogo, and 'fast and reliable' are probably not how you'd describe it. More like 'hell-sent and extortionate.'"[57] It took major airlines years to break free from Gogo, and it took Gogo's

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55 *See* Commission Communication – Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society, p. 9, available at https://ec.europa.eu/digital-single-market/en/news/communication-connectivity-competitive-digital-single-market-towards-european-gigabit-society.

56 Bloomberg, "Why Gogo's Infuriatingly Expensive, Slow Internet Still Owns the Skies, 'You're Now Free to Complain About the Wi-Fi'" 26 August 2015, available at https://www.bloomberg.com/features/2015-gogo-airplane-wireless-internet/; "Gogo Raises the Cost of Their All-Day Wifi Passes", 2 November 2016, available at http://onemileatatime.boardingarea.com/2016/11/02/gogo-wifi-pricing/ .

57 Bloomberg, "Why Gogo's Infuriatingly Expensive, Slow Internet Still Owns the Skies, 'You're Now Free to Complain About the Wi-Fi," *supra.*

competitors, including ViaSat, just as long to overcome the significant expense and difficulties involved in switching airlines to another in-flight connectivity provider.

Gogo boldly emphasized the barriers to entry that its competitors faced.[58] And now Inmarsat is doing the same today, touting what it claims as the "unmatchable economics"[59] of its exclusive ability to provide ATG in Europe, its "European capacity and coverage that cannot be matched by any satellite-only solution," and its "first mover advantage."[60] Inmarsat's CEO has recently admitted the practical consequences of what Inmarsat is seeking to accomplish, explaining that "the reality is that you tend to stay on for the life of the aircraft."[61]

Therefore, authorising Inmarsat to use the S-Band spectrum for its proposed ATG system would run contrary to ComReg's statutory objective of promoting competition when managing use of the radio frequency spectrum.

IV. CONCLUSION

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58 *See. e.g.*, Gogo Inc., SEC Form S-1 Registration Statement under the Securities Act of 1933, at 4, available at https://www.sec.gov/Archives/edgar/data/1537054/000119312511351260/d267959ds1.htm ("*Strong Incumbent Position.* We are the world's leading provider of inflight connectivity to the commercial aviation market and a leading provider of inflight internet connectivity and other voice and data communications equipment and services to the business aviation market. In our CA [commercial aviation] business, we currently provide Gogo Connectivity to passengers on nine of the ten North American airlines that provide internet connectivity to their passengers. As of September 30, 2011, *Gogo-equipped planes represented approximately 85% of North American aircraft that provide internet connectivity to their passengers. Approximately 95% of Gogo-equipped planes,* representing approximately 42% of our consolidated revenue for the nine months ended September 30, 2011, *are contracted under ten-year agreements. Our market leading position also benefits from the exclusive nature of a number of our contracts and the significant expense and inefficiencies that an airline would incur by switching to another provider.*") (emphasis added).

59 Inmarsat, Capital Markets Day 2016 (7 October 2016), p. 27, available at http://www.inmarsat.com/wp-content/uploads/2016/10/Capital-Markets-Day-2016.pdf.

60 Inmarsat, S-band and ACGC: Powering Aviation Connectivity at 63, available at http://www.inmarsat.com/wp-content/uploads/2014/09/Inmarsat_Investor_Day_S-band_And_ACGC_September_2014_EN.pdf.

61 Space Intel Report, Interview: Rupert Pearce, CEO, Inmarsat, 27 March 2017, available at https://www.spaceintelreport.com/interview-rupert-pearce-ceo-inmarsat ("We've just got to keep leveraging . . . above all our customers. Because when you get somebody like a Deutsche Lufthansa, for example, signing up to GX, they are making a very long-term decision. The decision itself gave us exclusivity for 10 years, so that's just one contract. But the reality is that you tend to stay on for the life of the aircraft."

ViaSat calls on ComReg not to authorise Inmarsat to use the S-Band spectrum for its proposed ATG system, as any such licence would:

- be inconsistent with ComReg's functions and objectives under Irish and EU law;
- breach EU conditions on the award of S-Band spectrum and reward Inmarsat for its lack of compliance with these conditions;
- reward Inmarsat's repeated failures to meet the relevant milestones and conditions more than 7 years after it was selected to provide pan-European mobile satellite service;
- breach EU MSS decisions defining the permitted use of S-Band spectrum, as Inmarsat's proposed ATG network does not fall within the definitions of mobile satellite systems and CGCs as currently laid out in the MSS Decision; and
- grant Inmarsat a significant pricing advantage in comparison to its competitors (such as ViaSat and Eutelsat), which would, in turn, create a significant risk of foreclosure of competition in the in-flight connectivity services market in Europe, to the detriment of (i) users and (ii) competition more broadly, including technological developments in that market and, as such, would be wholly inconsistent with ComReg's functions and objectives, including its statutory objective of promoting competition when managing use of the radio frequency spectrum.